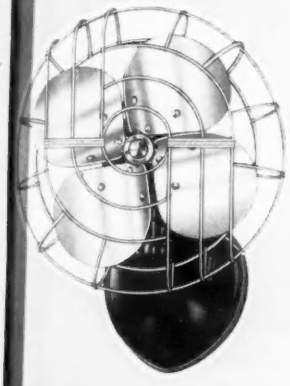
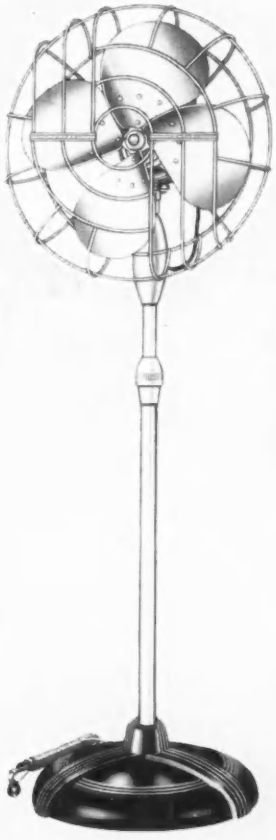
MARCH, 1940

ELECTRICAL SOUTH

...ersity of ...a
Library



HUNTER is now beginning its 53rd season in the exclusive production of electric fans and ventilating equipment. A completely balanced line — including the new home and commercial type cooling systems. HUNTER experience over the long years has developed an expert skill in workmanship which is needed to provide unsurpassed performance — quality — style and quietness.



HUNTER FAN & VENTILATING CO., Inc.

Factory: FULTON, N. Y.

General Sales Offices: Memphis Sterick Bldg.
Eastern Sales Office: New York, 92 Warren Street

Sales Offices:

ATLANTA	CLEVELAND	DETROIT	LOS ANGELES	PITTSBURGH
BOSTON	DALLAS	HOUSTON	NEW ORLEANS	ST. LOUIS
CHICAGO	DAVENPORT	KANSAS CITY	PHILADELPHIA	

HOTEL GILMER. COLUMBUS. MISS

HOTEL DIXIE SHERMAN
PANAMA CITY.....FLA

HOTEL DIXIE GRANDE
BRADENTON.....FLA

HUNTER Century

When you Come to Grips with Cable . . .
Use Buckeye Conduit that lets you pull a profit from the job just as easily as you can fish a cable through its oven-baked mirror smooth raceway. Good conduit is a combination of good pipe plus the proper non-conductive lining, and Youngstown is in the fortunate position of controlling the manufacture of Buckeye Conduit all the way from the iron ore.
The finished product reflects the advantages of that control. Ore, metal, manufacture, the finished conduit and its lining are all designed to go together into one excellent combination of those qualities of uniformity, ductility, ease of fishing and the high non-conductivity factor that contractors demand.
The universal acceptance of Youngstown Conduit is a true measure of these statements. Buy Youngstown Conduit and learn for yourself the faster time and greater profit you can make with it.
THE YOUNGSTOWN SHEET AND TUBE COMPANY
Manufacturers of Carbon and Alloy Steels
General Offices-
YOUNGSTOWN, OHIO
Conduit - Pipe and Tubular Products - Sheets - Plates Tin Plate - Bars - Rods - Wire Nails - Tie Plates and Spikes.
26-6A
BUCKEYE
TRADE
MARK
YOUNGSTOWN
CONDUIT
YOUNGSTOWN

HAZARD ARMORED CABLES

Hazard Armored Thermocable
has heat-resisting rubber insulation on each conductor, colored for identification, and armored for mechanical protection. Insures positive operation of control apparatus for heating and air-conditioning systems and units.

Hazard Armored Cable, Type AC
has a flame-resisting, moisture-proof paper sheath between the conductors and spiral interlocked steel armor. A ripcord beneath the paper facilitates installation. The insulating bushing is inserted at cut ends over paper sheath.

Hazard Armored Ground Wire
with tinned copper conductor without insulation, armored for protection. The armor makes grounding assurance doubly sure.

Hazard Flexible Steel Conduit
is offered as a single unit. This strong but flexible conduit saves time and expense for short runs, or where many bends must be made.

A complete line carried by
ELECTRICAL JOBBERS

ADEQUATE WIRING SERVES AND SAVES

HAZARD INSULATED WIRE WORKS

DIVISION OF THE OKONITE CO.

WORKS: WILKES-BARRE, PENNSYLVANIA

New York Chicago Philadelphia Atlanta Pittsburgh Buffalo Boston Detroit Seattle
Dallas Washington Cleveland San Francisco St. Louis Los Angeles

ELECTRICAL SOUTH is published monthly by W. R. C. Smith Publishing Co., Marietta, Ga., and Atlanta, Ga., U. S. A.
Subscription rates United States and Possessions $1.00 for one year; $2.00 for three years; Canada $1.50 per year; Foreign Countries, $2.00 per year
Entered as second class matter at postoffice, Marietta, Ga., under Act of March 3, 1879.
Volume 20 Number 3

General Electric Meets Present Markets With Finest Line of Refrigerators Ever Built

AND

Sweeping Price Reductions!

We'll Do It Again in 1940!

General Electric dealers are prepared for today's markets. With an even finer line of models, at competitive prices—new outstanding sales features—adequate profit margins—and the public acceptance General Electric enjoys—*it's going to be another G-E year.*

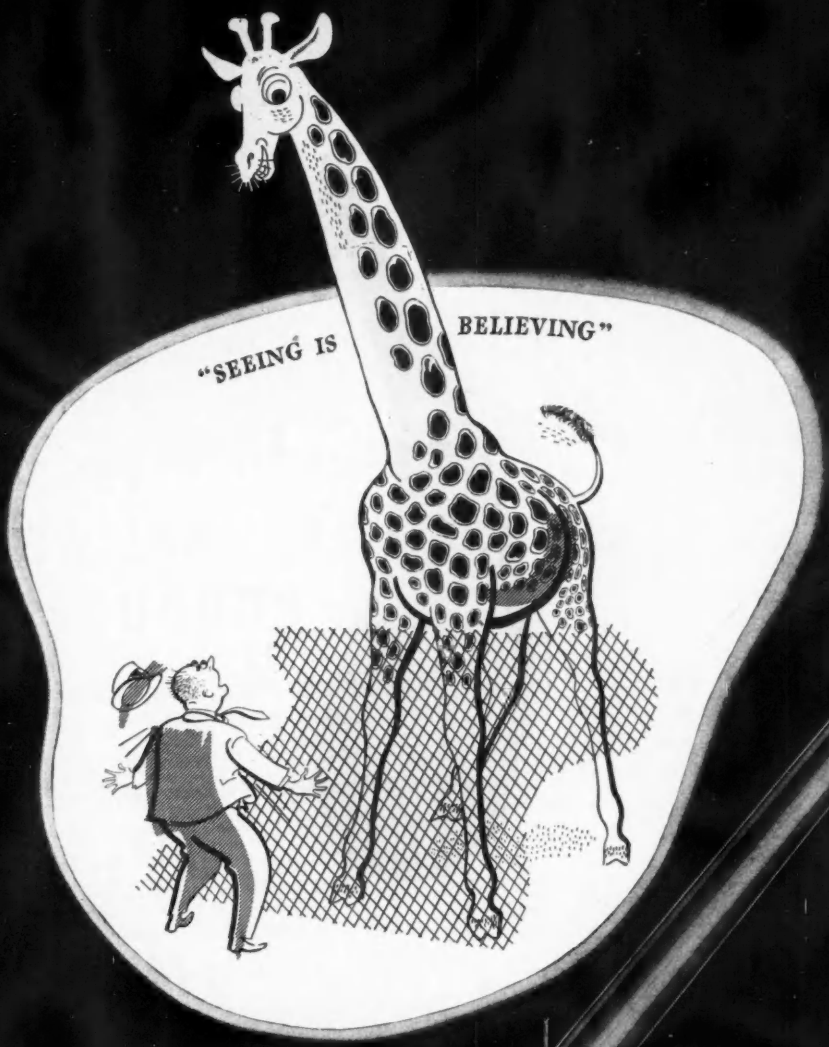
MODEL B8-40

6.2 CU. FT.
MODEL LB-6B
with all-steel cabinet, famous G-E sealed-in-steel Thrift Unit, and other features—

$114.75

Prices slightly higher in the south and west.

GENERAL ELECTRIC



N SPITE OF THE MAN WHO SAID—

"THERE'S NO SUCH ANIMAL."

BUT THERE STOOD THE GIRAFFE, AS PLAINLY VISIBLE AS HUBBARD FULL ROUND, TAPERED GUY PROTECTORS APPEAR TO PASSERS-BY. EVER PRESENT—EVER WATCHFUL—GUARDIANS OF THE HIGHWAYS AND BYWAYS.

HUBBARD AND COMPANY

PITTSBURGH . . . OAKLAND . . . CALIFORNIA . . . CHICAGO

"HANG THE LOAD ON HUBBARD HARDWARE"

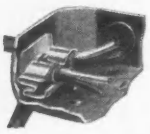
"They're always pleased with a job where I install RACO • ALL-STEEL • PRODUCTS"

YOU can always be sure of customer satisfaction when Raco • All-Steel • Products are used. Architects, contractors, electricians, builders all over the country have placed their stamp of approval on these products. They know that Raco • All-Steel • Products will meet the modern wiring requirements of their own locality efficiently and economically.

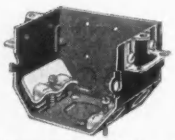
By standardizing on Raco • All-Steel, you are certain of products that have been kept up to date. A competent engineering staff, constantly making new developments, have kept pace with modern wiring trends. Raco • All-Steel • Products present many advantages in the steadily increasing rural and urban modernization market, as well as on new jobs.

More than 40 years of experience are behind the switch boxes, outlet boxes, cutout boxes, cabinets and conduit fittings carrying the famous Raco and All-Steel trademarks, assuring continued satisfaction and dependability. Write for a copy of the Raco • All-Steel • Products catalog—there is no obligation.

HERE ARE A FEW OF THE PRODUCTS IN THE COMPLETE RACO • ALL-STEEL • PRODUCTS LINE



RACO • ALL-STEEL CABLE BOX—3½" or 4" octagon. Permits side or back entrance of all sizes of non-metallic cables.

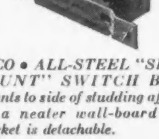


RACO • ALL-STEEL BEVELED CORNER SWITCH BOX for all types of non-metallic cables.

RACO • ALL-STEEL METALLIC CABLE BOX—3½" or 4" octagon with non-protruding clamp screws. Box may be installed in any position.

RACO • ALL-STEEL BOX for sidewall bracket with 2" vertical adjustment. Bridge is threaded for ½" nipple and equipped with set screw.

RACO • ALL-STEEL 4" SQUARE BOX with mounting bracket. Simplifies the installation of switches and receptacles.



RACO • ALL-STEEL "SIDE-MOUNT" SWITCH BOX. Mounts to side of studding affording a neater wall-board job. Bracket is detachable.

Distributed nationally by:

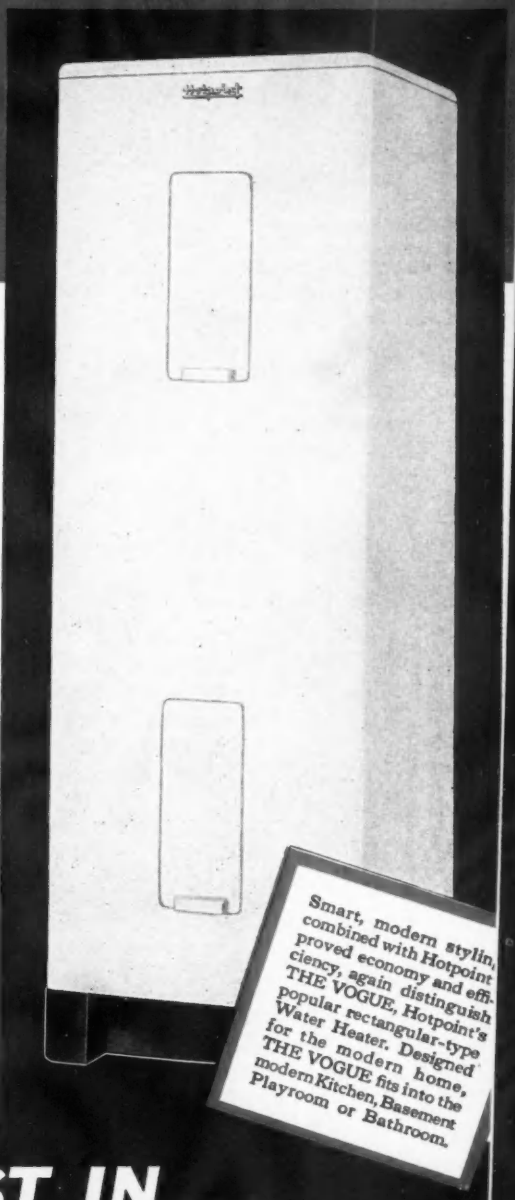
ALL-STEEL-EQUIP COMPANY
INCORPORATED
203 Griffith Avenue, Aurora, Illinois

Factories: **South Bend, Indiana; Aurora, Illinois**

RACO • ALL-STEEL • PRODUCTS
Switch Boxes • Outlet Boxes • Cutout Boxes • Cabinets • Conduit Fittings
Distributors in All Important Centers

LECTRIC WATER HEATING IS ON THE MARCH

ND Hotpoint EADS THE PARADE


Smart, modern stylin, combined with Hotpoint proved economy and effi- ciency, again distinguish THE VOGUE, Hotpoint's popular rectangular-type Water Heater. Designed for the modern home, THE VOGUE fits into the modern Kitchen, Basement Playroom or Bathroom.

DON'T be a straggler out there in front now for your e of the rich market that awaits e, alert promotion of modern point Electric Water Heating. er have conditions been so exactly for reaping big profits from elec- water heating . . . and never has point, leader in Electric Water Heater Sales, given you such a complete and beautifully styled line, backed by such a well-rounded sales promotion program. Mark this well —*1940 is going to be the greatest year in the history of Electric Water Heating.* Plan now to cash in with Hotpoint Automatic Electric Water Heaters.

There Is More Water Heater Sales Activity Than Ever Before In History!

MORE BUILDING ACTIVITY—New homes are rising by the thousands. Additional thousands of homes are being modernized. Each new home—each modernized home is a prospect for modern Hotpoint Automatic Electric Water Heating.

MORE INTEREST BY UTILITY EXECUTIVES—In every section of the country utility leaders are planning electric water heater sales campaigns. The Modern Kitchen Bureau is conducting a National Program to promote Electric Water Heating.

MORE PEOPLE RECOGNIZE ADVANTAGES—In modern homes, men, women and children use, and praise, the dependable modern convenience of Hotpoint "hot water at the turn of the faucet." They're spreading the word—creating new customers every day.

MORE WIRED HOMES—This year, there are thousands of new homes being built—thousands more being modernized and wired. The market is ready-made for active cultivation—and profit.

HOTPOINT IS FIRST IN...

NATIONAL ADVERTISING—Millions of people who are planning o modernize their present homes, or to build new ones—your best market—will read Hotpoint's national advertising every month of 1940 in *American Home* and *Better Homes and Gardens.* Hotpoint is the first manufacturer to give you national consumer advertising on water heating exclusively.

SALES AIDS—Hotpoint again gives you every help to profitable selling—colorful sales folders, broadsides, booklets, window and floor displays and sales training program and material which win prospects. Ask your Hotpoint distributor or district representative.

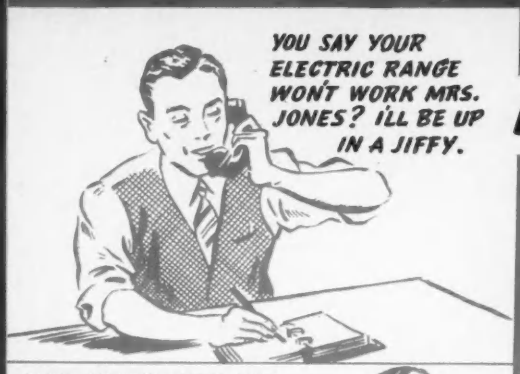
SALES PROMOTION—Complete plans, contest material and ideas for promoting successful sales campaign are available. They're yours for the asking. See your Hotpoint representative.

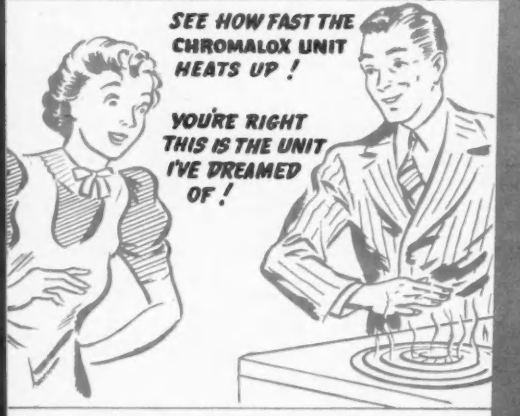
OUTDOOR ADVERTISING—Colorful posters, with space for imprinting your name and address, are available for display in your sales area. They tell the story of the safety, convenience and dependability of Hotpoint Electric Water Heating to every passerby.

EDISON GENERAL ELECTRIC APPLIANCE CO., INC., 5614 WEST TAYLOR STREET, CHICAGO, ILLINOIS

WATER Hotpoint HEATERS

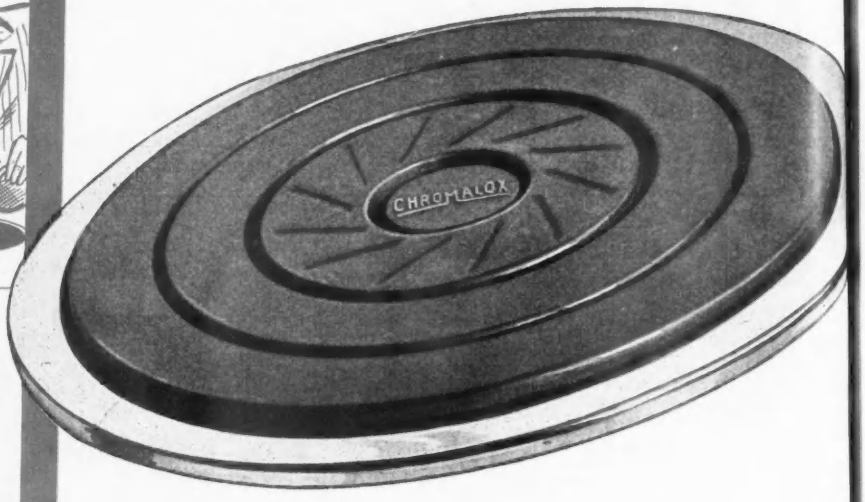
ELECTRIC RANGES • REFRIGERATORS • WASHERS AND IRONERS • CLOTHES DRYER • DISHWASHER-SINKS





MAKE RANGE UNIT REPLACEME
QUICK AND PROFITABLE WI

CHROMALOX
RANGE UNITS



WHY TIE UP MONEY in a varied stock of range units fo replacements when you're set to fit **any range** with a few doze inexpensive Chromalox **Stainless Steel** chrome-plated adapto rings and a small stock of Chromalox Unit assemblies? Snap o the proper adaptor ring, connect up the terminals, and you've made another happy kitchen, and another Chromalox booster.

Show your customer how she can avoid wasted heat, with the Chromalox "two-units-in-one" feature which provides the heated area to fit the utensil . . . point out how the all-flat top cooks by **conduction,** by actual contact of unit and utensil, cooking faster with less heat . . . emphasize how easy it is to clean that flat-top . . . endeavor to get her to regard the new unit as a demonstration unit. Call 'round again in a week or so, and talk about a new all-Chromalox-equipped range, based upon the fact that she is probably using the new unit whenever possible because she likes it better. Many a Chromalox replacement leads to a new range sale, sooner or later, by building greater acceptance for the electric range.

EDWIN L. WIEGAND COMPAN

7600 Thomas Boulevard **PITTSBURGH,**

Write us or our nearest representative

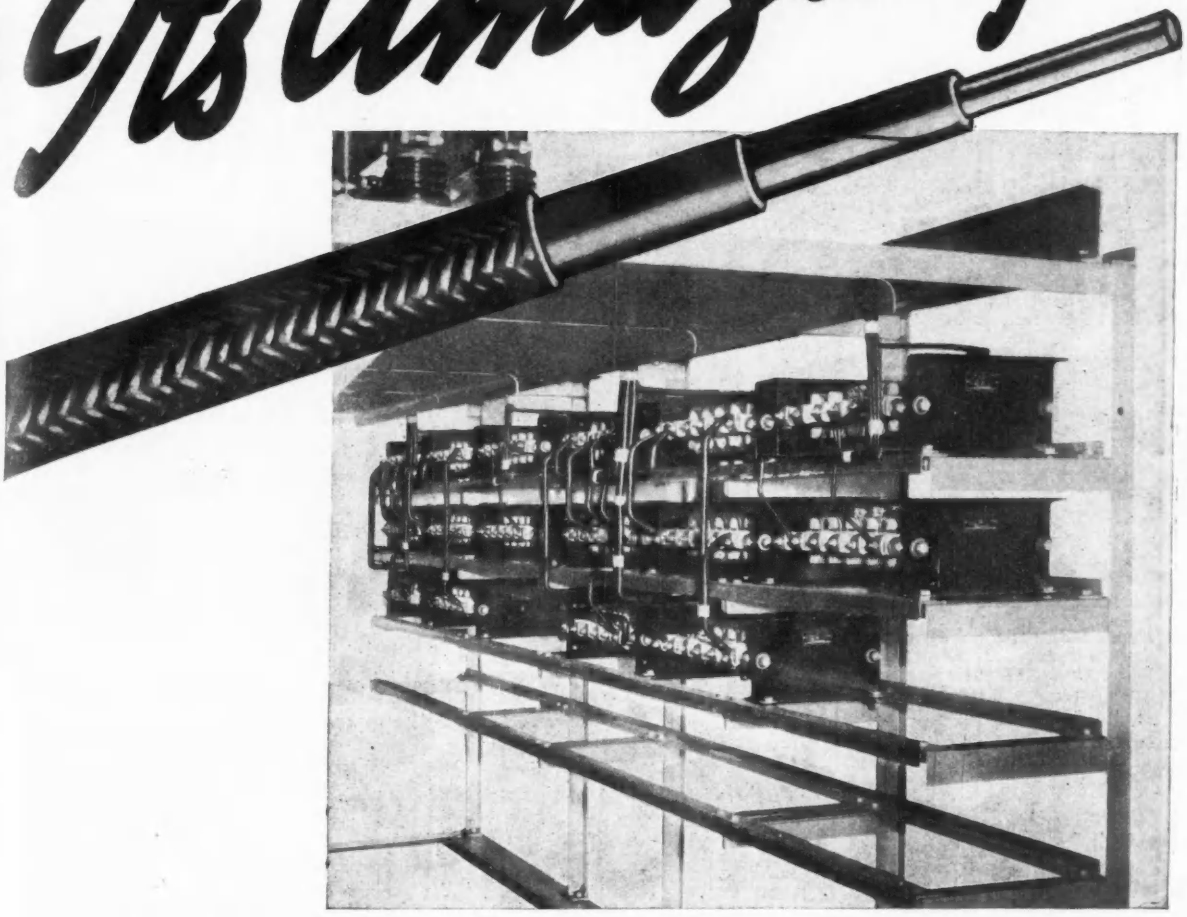
ATLANTA, GA.
C. B. Rogers, 1000 Peachtree Street

DALLAS, TEXAS
Elgin B. Robertson, 1215 N. Zangs Blvd.

OKLAHOMA CITY, OKLA.
Paul Berry, 3128 N. W. 26th Street

RALEIGH, N. C.
W. R. Phillips

It's Amazing...



HOW THIS NEW DELTABESTON RESISTOR CABLE CAN "Rub Elbows" WITH HOT RESISTORS

Yes—"rub elbows" with hot resistors and laugh at the heat—that's the job for which this G-E Deltabeston Resistor Cable was designed. That specifically.

It's amazing, all right—until you understand the reasons. Take, for example, the Flamenol tape wrap over that tinned copper conductor. Flamenol is a "bear for punishment" when it comes to protection from heat.

Look at the next wrap—purified Asbestos (by the exclusive Deltabeston Purification Process) felted around the tape and then impregnated with a flame-, heat-, and moisture-resisting compound.

Over this a closely woven purified asbestos braid with a heat- and moisture-resisting finish—a finish carefully applied and then wiped to give a smooth, uniform exterior coating.

IT'S NOT AMAZING, THEN—NOT IF YOU UNDERSTAND HOW DELTABESTON RESISTOR CABLE IS MADE. And don't forget that it laughs at moisture the same way it laughs at heat. YOU NEED IT ON YOUR CONTROL BOARDS.

Use the coupon to get a sample and catalog information on this New G-E Deltabeston Resistor Cable. We'll take care of you in a hurry.

GENERAL ELECTRIC

Deltabeston Wires and Cables are distributed by all G-E Merchandise Distributors and by Graybar Electric Co.

Section Y-0213, Appliance & Merchandise Department, General Electric Company, Bridgeport, Conn.

Send me a sample and catalog on the New Deltabeston Resistor Cable.

Name.....

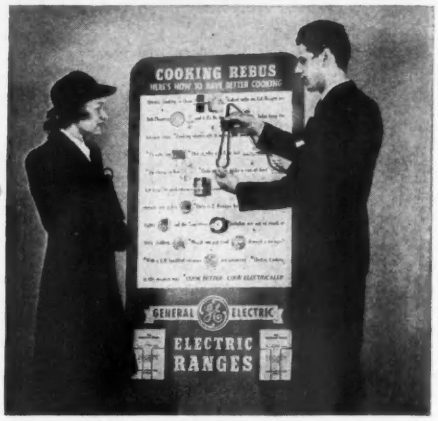
Address.....

City.....State.....

HERE'S WHY G-E IS THE EASIEST RANGE TO SELL!

New G-E Electric Ranges on your display floor will automatically start many a sale. Their gleaming white beauty and advanced design are sure to attract immediate interest. And new G-E models cook faster and use less current than ever before! New CLEAN SPEED 5-Heat Calrod Units throughout, Tel-A-Cook lights in color, famous G-E Tripl-Oven, Broiler Meter, Automatic Oven Lighting, and dozens of other *salable* features.

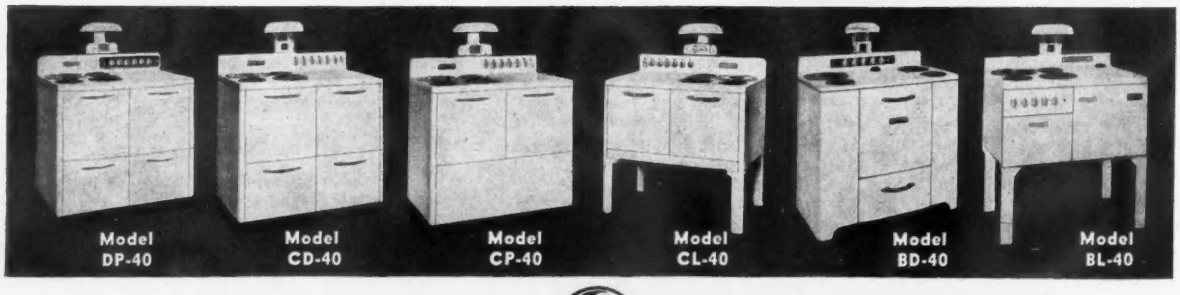
NEW G-E "COOKING REBUS" MAKES A DRAMATIC DEMONSTRATION!



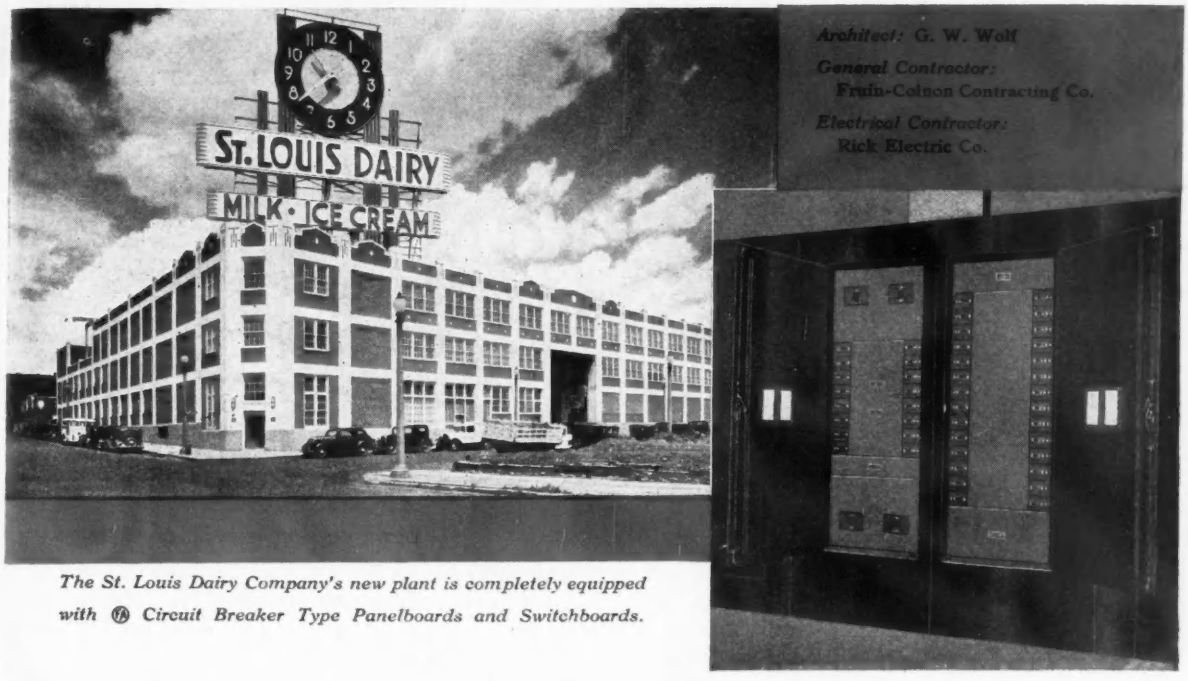
Here's a dramatic and easy way to tell the great G-E Range story. Pictures and "Props" show how the General Electric Range gives *ALL* the advantages of modern electric cooking. There's nothing like this startling new G-E "Cooking Rebus". It puts real showmanship into range selling.

CUT YOURSELF IN ON THE PROFITS!

General Electric Range dealers are out to break all previous sales and profit records. You can get a grand start with the big *G-E "Sale Blazers" Campaign* for April and May! "Cut yourself in on the profits" by phoning or wiring your G-E Distributor *today* for all details. General Electric Company, Appliance and Merchandise Department J-0213, Bridgeport, Connecticut.



GENERAL ELECTRIC



The St. Louis Dairy Company's new plant is completely equipped with Ⓕ Circuit Breaker Type Panelboards and Switchboards.

MEN of LONG EXPERIENCE PRODUCE the BEST PRODUCTS

In the Ⓕ organization, the service average of employes exceeds 15 years. The average of all *key* men is more than 25 years. This means something to the buyer—the installer—the user of Ⓕ Products. For example:

Ⓕ FEEDER PANELBOARDS

have been developed by the experienced men in the Ⓕ organization so that they are now built of *standardized units*. While each Panelboard is engineered for the job it is to do, these standardized units may be assembled as required for the specific application. Improved design—increased efficiency—and lowered costs result.

Ⓕ Feeder Panelboards are built for both light and power distribution—in many types and capacities—live face or dead front—with branch circuit capacities to meet all demands. Boxes of most types are shipped in advance; the Panelboards are readily installed after the boxes are in position.

Use the Knowledge of Ⓕ Sales-Engineers

Located in principal cities, they are at your call. They, also, are men of experience—trained to be of the greatest possible service to architects—engineers—contractors. Write for the name and address of our nearest representative . . . and send for Catalog No. 56 . . . Frank Adam Electric Company, St. Louis, Mo.

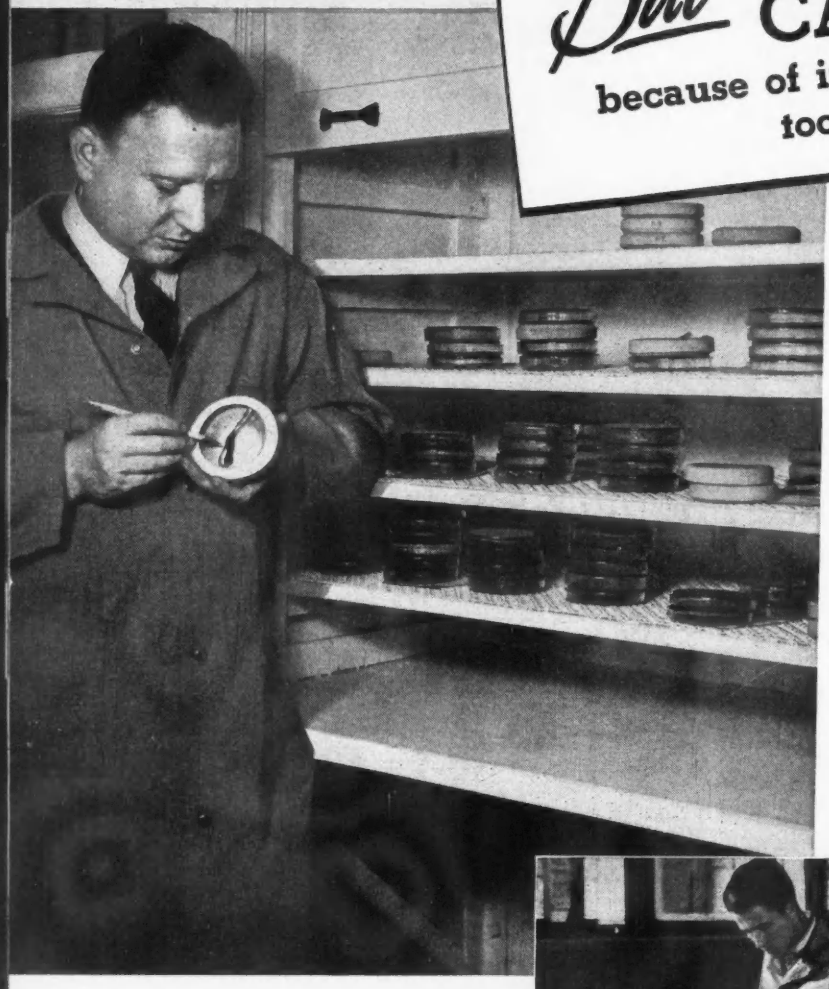
EST. 1891 THE SIGN OF A BETTER JOB
FA
Frank Adam
PANELBOARDS and SWITCHBOARDS
FRANK ADAM ELECTRIC CO. ST. LOUIS, MO. U.S.A.

CHAETOMIUM GLOBOSUM

may be a stranger to you—

But CABLE FAILURE

because of it, is an acquaintance of too long standing



BACTERIOLOGY, too, is the concern of Anaconda research engineers. For, in their never ceasing pursuit of enemies to long life of cables, they have found an insidious saboteur in Chaetomium Globosum, one of a group of fungi and bacteria capable of destroying cable insulations and causing failures.

Laboratory methods include the culturing of Chaetomium Globosum, and other destructive organisms, then subjecting various fibrous insulating materials to their attack. When they fail to make a conquest, Anaconda engineers know they have an insulation immune to their depredations.

This is but one example of the service and protection that is being built into all wires and cables bearing the Anaconda trademark.

40349

Under very carefully controlled conditions samples of variously treated fibrous materials are subjected to the action of typical molds and bacteria.

•

Hundreds of different compounds are run on Anaconda's experimental lines and materials must pass most stringent tests before being put in service.

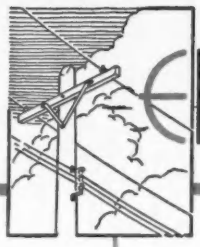
USE MODERN IMPROVED **Anaconda Wire & Cable**

ANACONDA WIRE & CABLE COMPANY, General Offices: 25 Broadway, New York City; Chicago Office: 20 North Wacker Drive

Subsidiary of Anaconda Copper Mining Company. Sales Offices in Principal Cities

MARCH
1940

Volume 20 No. 3



ELECTRICAL SOUTH

J. C. MARTIN, Manager
W. E. COOGLER, Production Manager

Editorial and Business Offices
GRANT BUILDING
ATLANTA, GEORGIA

MEMBER OF A. B. P.
MEMBER OF A. B. C.

ANNUAL SUBSCRIPTION—$1.00
THREE YEARS—$2.00
CANADA—$1.50; FOREIGN—$2.00

Business Representatives:
L. E. ALLEN, 189 West Madison St., Chicago, Ill.
L. R. McCARTY, 325 Winding Way, Merion, Pa.
W. S. CUSHION, 506 The Arcade, Cleveland, Ohio.
W. A. McGEE, P. O. Box 562, Charlotte, N. C.

Published Monthly by
W. R. C. SMITH
PUBLISHING CO.
Marietta and Atlanta, Ga.

W. R. C. SMITH, *Chairman of Board,*
W. J. ROOKE, *President,*
T. W. McALLISTER, *Vice-President and Editorial Director,*
E. W. O'BRIEN, *Vice-President,*
W. S. CUSHION, *Vice-President,*
R. W. PHILIP, *Vice-President,*
O. A. SHARPLESS, *Treasurer,*
J. C. MARTIN, *Secretary,*
E. L. PHILPOT, *Asst. Secretary and Treasurer*

Publishers Also of
COTTON
SOUTHERN HARDWARE
SOUTHERN AUTOMOTIVE JOURNAL
SOUTHERN POWER AND INDUSTRY

T. W. McALLISTER, Editorial Director CARL W. EVANS, Editor
NAT M. JOHNSON, Southwestern Editor

Contents

Electrical Business Trends	13
More Effective Selling for Electrical Contractors	15
Sales-Minded Contractor—Alex L. Bear	17
22,000 Prospects	19
Specialization Simplifies Sales Technique	20
Facts Will Help You Sell	22
Now that You've Got the Job—	23
Satisfied Customers—How to Keep Them That Way	25
Inspectors Hear 1940 Code Preview	27
Something to Shoot At—More on Effective Contests	29
Personalized Service Policy	31
Lighting for Both Utility and Display	34
Rubber Protective Equipment on 13 Kv Changeover	40

Departments

Electrical Appliance Service	36
Motor Rewinding and Repair	38
News of the Industry	46
Manufacturers' News and New Products	62

Copyrighted 1940, W. R. C. Smith Publishing Co., Atlanta, Ga.

Entered as second class matter at Marietta, Ga., U. S. A., under Act of March 3, 1879.

NOTE! The ultra-efficient porus film which produces the light in every Hygrade Fluorescent lamp, was invented by Hygrade in 1933, and resulted in Hygrade patent No. 2096693.

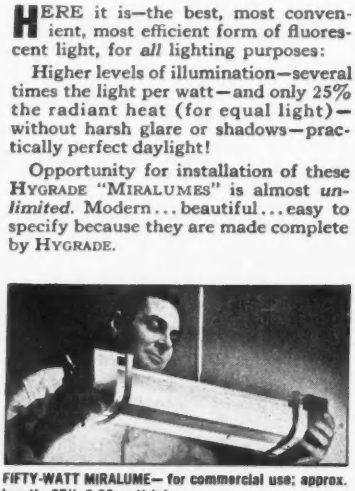
AND NOW 6 HYGRADE MIRALUMES

ARE READY—TO MODERNIZE ANY COMMERCIAL OR INDUSTRIAL LIGHTING! COMPLETE UNITS—WIRED—READY TO INSTALL—*FLUORESCENT AT ITS FINEST!*

HERE it is—the best, most convenient, most efficient form of fluorescent light, for *all* lighting purposes:

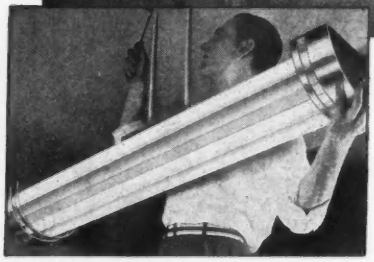
Higher levels of illumination—several times the light per watt—and only 25% the radiant heat (for equal light)—without harsh glare or shadows—practically perfect daylight!

Opportunity for installation of these HYGRADE "MIRALUMES" is almost *unlimited*. Modern . . . beautiful . . . easy to specify because they are made complete by HYGRADE.



FIFTY-WATT MIRALUME—for commercial use; approx. length, 25"; 2 20-watt tubes.

INDUSTRIAL MIRALUME—HF-100—approx. length 57"; 2 40-watt tubes; 100-watt unit.



COMMERCIAL OR INDUSTRIAL—HF-200 MIRALUME: 200 watts; 4 40-watt tubes; approx. length, 50"

SHOWN HERE are four of six MIRALUMES *ready now*—as this goes to press. They are designed, engineered, built and guaranteed by HYGRADE. Wired—ready to install—no costly rewiring required.

Every MIRALUME is corrected for power factor—and stroboscopic effect (flicker). Starters are easily accessible.

Get full information from your local Hygrade jobber—or use coupon below. Thousands are being installed each week.

THE TRIANGLE OF LIGHT EFFICIENCY

LOW COST · FULL LIFE · MORE LIGHT

FLUORESCENT AT ITS FINEST—

Hygrade

Hygrade Sylvania Corp., Est. 1901, Makers of Hygrade Incandescent Lamps and Sylvania Radio Tubes

CLIP AND MAIL TODAY

HYGRADE SYLVANIA CORPORATION
SALEM, MASS.

I am interested in Hygrade Fluorescent Miralum Units . . . prices, discounts, full information.

COMPANY _____

INDIVIDUAL _____

ADDRESS _____

CITY AND STATE _____ ES-3

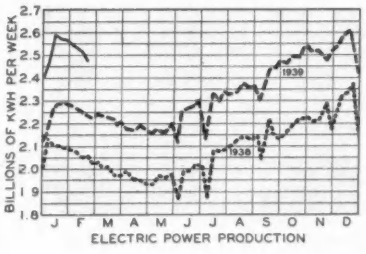
Copr. 1940 Hygrade Sylvania Corp.

Electrical Business Trends

PRELIMINARY statistics released by the Edison Electric Institute indicate that the average annual consumption per domestic customer in the United States for 1939 was approximately 900 kilowatt-hours. Of this amount only an estimated 317 kilowatt-hours were consumed by lighting equipment, the remaining two-thirds representing the energy consumption of household appliances.

The actual estimated kilowatt-hour consumption of the various types of appliances for 1939 is as follows:

Appliances:	Millions of Kwhrs:
Lighting	7,460
Refrigerators	4,632
Ranges	2,147
Radios	1,880
Water Heaters	1,630
Flatirons	1,538
Oil Burners	386
Washing Machines	276
Vacuum Cleaners	231
Roasters	198
Toasters	182
Percolators	176
Electric Clocks	172
Ironing Machines	142
Space Heaters	100
Total	21,150



Per Cent Changes 1940 Over 1939	Week Ending Feb. 24	Week Ending Feb. 17
New England	+ 7.0	+ 5.2
Middle Atlantic	+ 7.4	+ 7.2
Central Industrial	+12.5	+12.9
West Central	+ 9.7	+ 9.9
Southern States	+10.9	+11.2
Rocky Mountain	+16.6	+15.1
Pacific Coast	+ 7.2	+ 7.4
Total	+10.3	+10.1

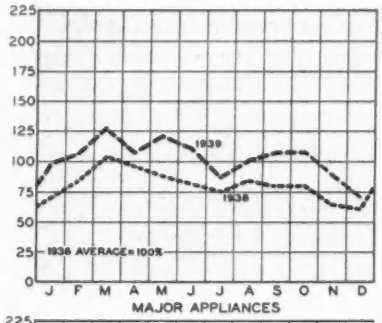
The saturation of two appliances is now estimated at 100%; these are the radio and the flatiron. Other high ranking appliances from the standpoint of saturation include: refrigerators, 57%; toasters and clocks, each 52%; and washing machines and vacuum cleaners, each 49%. Water heaters and roasters rank lowest in saturation with 3% and 4% respectively. Other saturations are: percolators, 30%; space heaters, 21%; ranges, 9%; oil burners 7%; and ironing machines, 6%.

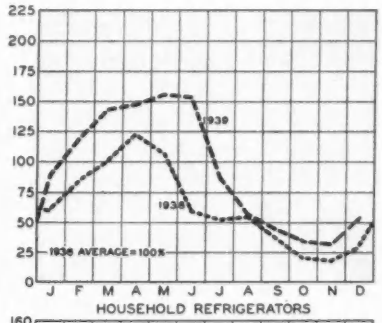
* * *

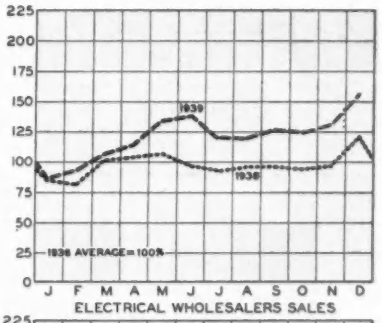
Continued improvement in electrical wholesalers' sales were observed up to the close of 1939 with wholesalers in the South Atlantic states enjoying the largest increase over the previous year.

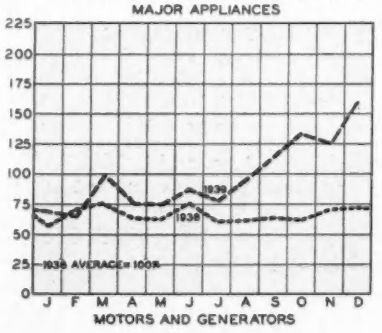
Sales of electrical wholesalers in the South Atlantic states were 48.6% greater in 1939 than 1938 although the increase for the country as a whole was only 21.8%. Sales in the East South Central states were also above the national average with an increase of 23.8%. Sales in the West South Central states were slightly under the national average, showing an increase of only 17.2%.

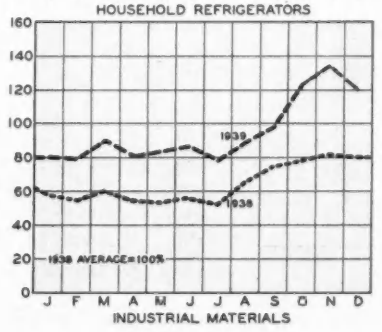
Much of the improvement in the South Atlantic states was noted in the latter part of the year. December sales were 53% above the same month last year.

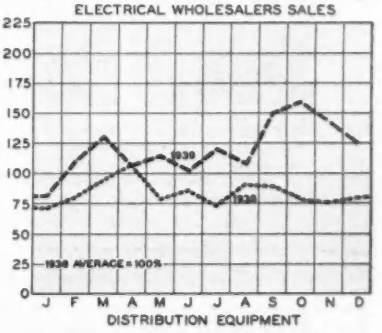










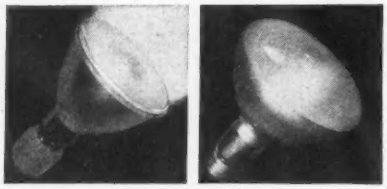


All of the above indexes of electrical business activity are based on figures available from the National Electrical Manufacturers Association, except the index of electrical wholesalers' sales which is based on data published by the United States Department of Commerce. The indexes on motors and generators and distribution equipment are based on orders received, while the index on industrial materials, including such items as electrical porcelain, mica, vulcanized fiber and laminated products, is based on sales billed. The index on distribution equipment includes such items as high voltage insulators, paper cable, power switching equipment, power distribution transformers, and varnished cambric cable. The index on major appliances does not include refrigeration and is based on sales billed. The index on household refrigerators includes complete household refrigerators, separate household evaporators, and separate systems of 1/4 horsepower or less. The index on electric power production is based on data released by Edison Electric Institute.

General Electric Announces

NEW LOW PRICES

G-E MAZDA *Fluorescent lamps are recommended for use only with equipment providing good power factor. The lamp to the left in the above photo is the T-8 size which is 1" in diameter... the other is a T-12 size which is 1½" in diameter.*



G-E MAZDA Projector lamps (left) combine reflector, lens, and 150 watt filament in one sealed-in unit. G-E MAZDA Reflector lamps (right) are for indoor use. Both lamps come in Spot and Flood types.

ON FLUORESCENT AND OTHER G-E MAZDA LAMPS OF IMPORTANCE TO BUSINESS AND INDUSTRY

EFFECTIVE March 1, 1940, General Electric announces new low prices on G-E MAZDA F (fluorescent) lamps. Greater demand for these lamps has brought increased production. The resulting manufacturing economies are passed on to customers in the form of new low prices. Because of this policy of offering better and better MAZDA lamps at lower and lower prices, it pays to be sure that the lamps you recommend bear the G-E monogram.

NOTE: G. E. tells its customers: "Fluorescent lighting must be used correctly. There are many places where fluorescent lighting is ideal. Others where some other type of lighting may prove more desirable. Be sure to consult a qualified lighting expert who can assist you in getting the type of lighting you require."

General Electric Company, Nela Park, Cleveland, Ohio.

Fluorescent (Daylight and White lamps)

WATTAGE	BULB SIZE	WAS	NOW
15	T-8	$1.35	$1.15
15	T-12	1.70	1.45
20	T-12	1.90	1.65
30	T-8	1.85	1.50
40	T-12	2.70	2.30

Blue, Green, and Pink fluorescent lamps

15	T-8	$1.45	$1.25
15	T-12	1.80	1.55
20	T-12	2.00	1.75
30	T-8	1.95	1.60

Gold and Red fluorescent lamps

15	T-8	$1.55	$1.35
15	T-12	1.90	1.65
20	T-12	2.10	1.85
30	T-8	2.05	1.70

OTHER PRICES ALSO REDUCED. The 150 watt G-E MAZDA Projector lamp (both Spot and Flood types) is reduced in price from **$1.70 to $1.40.**

The 300 watt G-E MAZDA Reflector lamp (both Spot and Flood types) is reduced from **$1.90 to $1.70.**

Also effective March 1, 1940, General Electric announces price reductions on G-E MAZDA Lumiline lamps and certain high voltage lamps.

G-E MAZDA LAMPS
GENERAL ELECTRIC

YEAR BY YEAR, BETTER LAMPS FOR EVERY PURPOSE

Increased building construction in the South and more intensive local promotions of adequate wiring indicate that 1940 will be an unusually good year for electrical contractors. Their greatest need, to capitalize these trends to advantage, is "More Effective Selling." In the following articles, which describe the selling methods of successful southern contractors, this problem has been given particular attention.

More Effective Selling

For Electrical Contractors

By Howard Williams

Vice President, Trade-Ways, Inc., New York City

IN the files of perhaps every contracting organization in the country today may be found anywhere from a dozen to a hundred excellent proposals and estimates peacefully reposing in their last long sleep,—what might have been living contracts are now dead "file-fodder" stirring only sad memories of defeat in the battle of sales, as they lie buried in that cemetery of lost profits.

What was wrong with these dead proposals? Were they properly prepared? Let's take for granted they were. Did they meet the plans and requirements of the prospect? In most cases, they did. Were the prices fair and the terms reasonable? In all probability, yes. What then was wrong? The answer is simple.

Some of them, of course, went down to defeat in open competition after a tough struggle. But many of them, beyond any question of doubt, failed of success simply and solely because they were not backed and supported by the kind of personal selling which would have turned defeat into victory.

It is safe to say that at least 20%, (perhaps more, 30% — 40%), might have been saved, if only they had been effectively sold, for effective personal selling is the important key which turns proposals into signed contracts. The industry as a whole won't worry much about those contracts lost in intra-industry competition. What one contractor lost another got. What it is concerned about is the problem of creating more electrical contracting business.

Each individual contractor is naturally chagrined at losing business to his direct competitors but what every contractor should worry about much more are those scores of lost opportunities and lost contracts which other industries took away from him. I mean:

—That re-wiring job which was almost sold, when a roofing salesman stepped in and over his head sold the home owner a new roof, which postponed your job until another year.

—That almost sold residence job that died on your hands, but really came back to life in the form of a new automobile, a new paint job, a trip to Bermuda, or a new insurance policy.

—That commercial job where the store or restaurant owner really was interested in the profit possibilities of a new lighting installation but somehow it got sidetracked for an air-conditioning system and a noise-deadening installation.

—That machine tool shop where the opportunity to sell a good contracting job for increased industrial use of electricity was neglected or not vigorously followed up.

There's your real competition and there is also your great opportunity. For every job lost to a competitive contractor, there are five others which no electrical contractor got either because he didn't go out and create it, or because he lost it to another industry, and mainly because of ineffective selling!

What would it have meant to your profits if a considerable percentage of these now dead proposals had been turned into closed contracts? You know the answer to that even better than I.

But let's waste no tears now on "what might have been." Let's look ahead to future business, and especially to the key which will unlock the door to that business—effective personal salesmanship. If more effective selling is what we need for the future, consider this question:

What is Effective Selling?

Most of us readily grant the importance of the personal element in selling. We know that every negotiation (whether it be a political treaty, a marriage proposal, or a business contract) is ultimately closed by personal salesmanship; and that every negotiator (by any name you may call him: ambassador, suitor, or company executive) is in essence a salesman.

Nevertheless, many people are quite vague and confused in their understanding of the real nature of salesmanship.

Some of us say, "After all, selling, you know, is really quite simple. Get your prospect interested, explain your product or services, persuade him to buy." Now that certainly is simple,—and clear as mud—comparable to that simple and helpful advice given to a would-be sculptor, "Just take a block of marble and chisel off what you don't need."

At the other extreme are those who think that effective personal salesmanship somehow demands the use of high-pressure methods, "putting on the heat," or a "witch-doctor" performance in which the salesman resorts to some weird and mysterious psychological tricks (such as sizing up his customer's physiognomy) to mesmerize his prospect into submission.

Both are equally ridiculous and equally misleading. Effective salesmanship is a science,—an honest, straightforward science which can be earned and practiced by anyone who wants to improve his selling technique and close more contracts.

In the main, effective personal selling involves:

1. Planning the interview thoroughly so that the salesman is fully equipped with all essential information so arranged that facts, ideas, and arguments are marshalled for logical presentation and for cumulative effect.

Many a negotiation is half-doomed at the very beginning by reason of weak, half-baked, slipshod preparation because the salesman is either downright careless or trusts to good luck and inspiration to tide him over the rough spots. He doesn't know where he is going and he therefore doesn't get far—doesn't "go places" with his negotiation.

2. Making the presentation "come alive" by using pertinent incidents to illuminate his points and striking instances to drive them home; —by developing his story from the viewpoint of his prospect's needs and interests—by explaining each step or point clearly and showing what it means to the customer, not only what it is, but what it does.

Sell Use Value

The good salesman doesn't sell "things." He sells "uses," "benefits," "conveniences," "values." The insurance salesman doesn't sell policies—he sells protection and security. The home insulation salesman doesn't sell rock wool—he sells greater fuel economy and protection against cold and heat.

You electrical contractors don't sell wire and outlets. You sell the convenience, uses and values of electricity; safe insulation against fire; and better electrical service; plus complete confidence in your ability, experience and reputation to do an installation job that will insure a maximum of satisfaction to the customer. These, at least, are what the prospect wants and what he is interested in buying; and these are the things that must be clearly, vividly, and convincingly presented and emphasized in the negotiation.

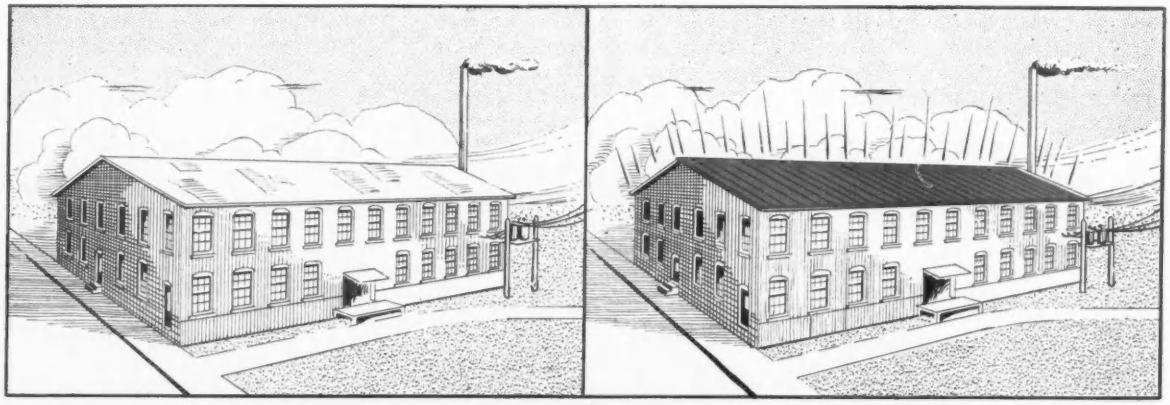
Presentation Most Important

3. Taking action procedures which win decisions. Here we come to perhaps the most important single factor in handling negotiations with prospects. Your presentation may be flawless. Every point has been covered—every objection met and satisfied. The prospect seemingly agrees with everything. The unsigned contract lies on the table. The time has now come for him to act. But he doesn't act. He stalls. He makes excuses. He wants "to think it over." Or perhaps he doesn't act from sheer inertia, or an acute desire to postpone action. He will do anything to put off signing that contract now.

Perhaps the greatest weakness of most salesmen is their inability to overcome this inborn reluctance of human beings to make decisions. Yet it is a salesman's paramount business to cause men to act—to move the prospect to a decision. That's the real crux and heart of selling.

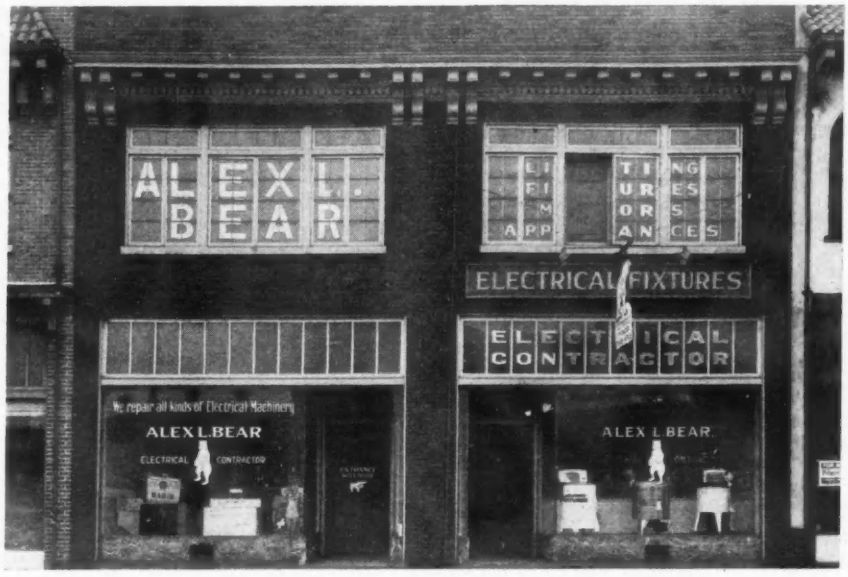
Once a salesman learns the principles that move men to favorable

(*Continued on page* 33)



This factory was an A-1 rewiring prospect—but the roofing man was a better salesman!

No contractor wants to lose business to his direct competitors — other electrical contractors. But what every contractor should worry about are the scores of contracts lost to other industries. For every job lost to a competitive contractor, there are five jobs lost to the electrical industry because of ineffective selling.



Sales-Minded Contractor

"Effective selling" is no new topic to Alex Bear, of Richmond, who long has maintained an effective sales division.

A CAREFUL division of the several vital functions of a contracting business into independent departments and the close coordination of the operations of these departments is primarily responsible for the position of the Alex L. Bear Company, of Richmond, Virginia, as one of the foremost and largest electrical contracting concerns of the South.

"By dividing our organization into departments, we are enabled to give each the individual instruction and supervision that it needs in order to do its individual job with maximum efficiency," says Alex L. Bear, company president. The fact that the company recognizes the three functions of sales, installation, and repair work as being different and separate factors, and trains men separately in each is evidence enough that each job is a different one and that each is important in its own right.

Seventy-four men are employed full time by the Bear Company, and none of them is a "jack-of-all-trades"; each man has a specific job to do for which he has been specifically trained. Personnel selection is made with care, particularly in the sales department. The departmentalization is carried out even within the machinery selling section of the company, there being seven salesmen who are kept on the road and in the city at all times handling direct equipment sales.

Two special solicitors are employed to develop industrial electrical contracts, and to do an institutional job of selling the Bear Electric Company to electricity users of the area.

No effort or expense is spared to keep the men on Bear's firing line the best possible. The company operates a regular training school, where weekly lectures are given, and nationally known figures in salesmanship, public speaking, and electrical work are invited to appear before the company's staff frequently. After each session the meetings turn into a form of clinic, where each salesman's problems and markets are taken up individually, and pointers and suggestions designed to fit his own case are worked out. Industrial electrical contract solicitors also participate in these schools.

In their territories, which cover Richmond, and surrounding districts such as Petersburg, Colonial Heights, Hopewell, Ashland and similar neighboring towns, the salesmen carry lines of motors, heavy duty appliances, and electrical equipment. Both canvas and the cultivation of established customers is in their province, and the follow-up of leads gained by the heavy barrage of newspaper advertising which the company maintains constantly. The means of compensating them is that which the firm has found to be most satisfactory to both company and employee, and which retains an element of incentive for the salesmen: the men are paid basic salaries, and a bonus on all sales annually over a specified figure in ratio to their salaries.

The solicitors' function is primarily the development of large electrical contracts and the establishment of channels through which the firm can receive current maintenance work. Schools, factories, hospitals, institutions, office buildings, industrial plants, every major user of electricity and electrical equipment is visited by the solicitors, whose function is twofold.

They keep tabs on the erection and contemplated construction of all buildings and homes where electrical equipment can be sold, call-

ing on the builder and the contractor, paving the way for a follow-up by an equipment salesman or the closing of an installation contract for the Bear Company. In their coverage of the major electrical users, they secure permission to inspect periodically the electrical outlets and equipment. There they make complete diagnoses of each electrical system, record notes of inadequacies encountered, and on the condition of equipment inspected.

Contacts have been made in numerous plants where the regular inspection by the Bear man is a part of the plant's routine, regarded as a service which the plant appreciates. When any repairs or replacements are required, the Bear company is given a free hand. When cultivating a new firm, the solicitor takes complete details of any needed work back to the company's offices, has complete plans and prospectus prepared covering the job and its cost, and presents it to the plant superintendent in the form of an estimate and bid.

No charge is ever made for the inspection and recommendation, and such presentations quickly develop into service contracts wherein the company is told to make any repairs it finds necessary at any time. In the spring, when the building industry is at its height, additional men are added to the soliciting staff, taken either from the sales department or added from outside applicants.

Building contractors and architects have been carefully cultivated by both solicitors and salesmen, with the result that nearly half of the wiring of new buildings which comes to the firm comes through building contractors who have been set up by the Bear sales staff as regular sources of outside business.

When the Broad-Grace Arcade was built in Richmond, the sales machine of the Bear Company went smoothly into operation. Plans were secured by the solicitors, and an estimate and bid quickly whipped into shape. Builders involved were contacted and their cooperation assured. The result: a contract for all wiring, fixtures, and electrical apparatus in the entire building, which amounted to $42,000. Again, when the Richmond Engineering Company announced the opening of a plant, a Bear engineer was on hand to discuss their power needs, and to present plans and recommendations. Twelve thousand dollars worth of motors were sold to the firm by the Bear Company as a result.

Both in industrial equipment, and in commercial and residential electrical fixtures, Mr. Bear is a believer in the "full-stock" policy of merchandising. In soliciting an industrial supply contract involving a wide variety of motors and equipment, the Bear Company was able to demonstrate and discuss each item involved in its own warehouse stock. When a builder or architect wants to discuss fixtures, he is taken to the second floor of the Bear building where he can examine one of the most complete assembly of lighting fixtures to be found under one roof in Virginia.

Keeping in step with the latest in repair and testing equipment is one of the most important keynotes of the Bear Company's operation. A complete range of testing meters for all applications is maintained, and the repair and service shop is equipped with every power device designed to further efficiency and thoroughness in repair and service work.

Special arrangements and equipment are developed to meet the specialized needs of different markets: an instance is an unusual service made available to tobacco growers and warehousemen, and used also by wheat and grain men of the vicinity. Special magnets have been devised to remove particles of foreign matter from the picked tobacco and thrashed grain, and three men are employed full time on specialty services such as this.

The ultimate in service is found in the repair department where, as an example of the policy of the company, every piece of equipment sent in for repair or service is cleaned completely, and repainted if needed, so that when returned to the owner, it looks like a new piece of machinery. No charge is made for this extra service; "by painting and cleaning all repaired equip-

(*Continued on page* 33)

In industrial equipment, as well as in residential and commercial fixtures, Mr. Bear is a firm believer in the "full stock" policy of merchandising. Shown here is a customer about to make a selection from a group of crystal fixtures, part of what is said to be one of the most complete fixture displays in Virginia.

22,000 Prospects!

O. S. White, secretary of the Eastern Electric Co., of Norfolk, looks over a few of the 22,000 prospect cards maintained entirely for sales promotion.

IN a city the size of Norfolk, Virginia, there may be anywhere from 50,000 to 100,000 places where electrical repair and contracting service may be in demand and may be sold. These prospects represent too great a potential service of business to be cultivated without a good system, believes O. S. White, secretary of the Eastern Electric Company, of that city. The result of this thinking is what is probably the most complete accumulation of information, records and data on users of electrical service in existence in the State, which is used in every way conceivable in aggressive sales promotion and systematic organization of an electrical repair and contracting business.

To the Eastern Electric Company, any customer, whether the call be for repair of a refrigerator motor or the wiring of an office building, is more than a closed job ticket and a cipher in the ledger. Reasoning that anyone who has occasion to use electrical service once may well need it again, the company has meticulously accumulated a working card file of every customer with whom it has had dealings, adding to them every known prospect and users of power equipment, whether the firm has served them in the past or not. On these cards are recorded all known data about each customer or user: records of equipment, dates and nature of service already rendered, and any pertinent information which might be of use to a service man about a call, or a solicitor about to try for a contract.

"Some contractors try to keep records of customers and prospects through file copies of job tickets, and this is, as far as the larger accounts go, satisfactory to a degree," commented a company official. "But job tickets scattered through a correspondence file don't afford finger-tip reference, nor do they make room for pertinent information other than that which directly concerns the job covered, nor do they include prospects which have never before been sold."

Color Code Helpful

In March, 1940, the Eastern Electric Company's card record contained over 22,000 cards on as many customers and prospects. For greater efficiency and more rapid reference, the records are divided into four general classifications: residential work, commercial and industrial work, real estate company holdings, and air-conditioning service and maintenance. Different colors are used for the classifications: cream for residences, green for industrial accounts, orange for real estate properties, and white for air-conditioning.

From the essential information contained in this card record, the nucleus of the business promotion side of the firm, springs a multi-pointed attack in developing new business and keeping existing relations satisfactory and on the increase. Primarily, the records are of inestimable value in reference and research: of equal importance is their function as a general mailing list for the company's mail promotion. Every ninety days, a reminder mailing goes to every customer in the file, sometimes postal cards, sometimes more elaborate promotional literature, always stressing the fact that electrical service is an ever-present need.

Second point in the attack is the company's soliciting staff of five expert contact men, who work on canvass, tips from the "grapevine", and definite prospects from the knowledge contained in the firm's card record. The card file provides an endless mine of live prospects for canvass calls, for by an analysis of the equipment in service, its age and its use, the dates and nature of last service, it can be determined with reasonable accuracy who will need more service in the future, and about when they will need it. Twenty-two thousand accounts is enough to keep turning over perpetually, and armed with the advance knowledge that certain equipment may be in need of repair, or that a certain building's wiring will need checking, the solicitors can turn up almost magically at the right time to make a bid for the work.

A second aspect of the solicitors'

(*Continued on page* 26)

Outdoor Lighting Specialization Simplifies Sales Technique

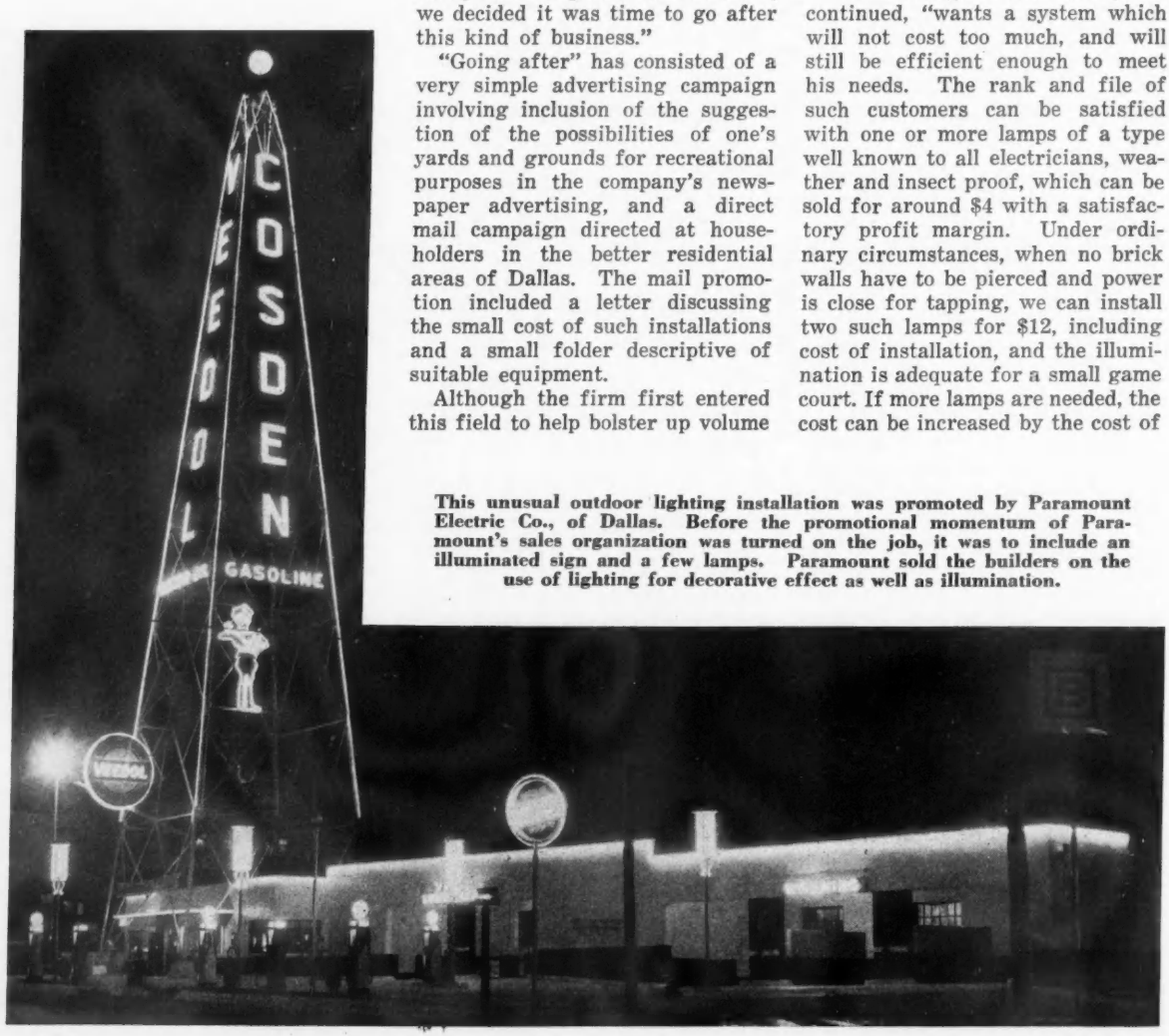
WITH the coming of the lengthening of the recreational day by artificial lighting of out-door facilities, a wide new market was opened to the electrical contractor, one which had existed for a long time, but the invasion of which had never been practicable before the modern acceptance of outside lighting. One contractor who has recognized the possibilities of this field, and has capitalized upon them to the fullest is the Paramount Electric Company, of Dallas, Texas.

"The general public, we observed, had been rapidly becoming light conscious," comments D. D. Cahn, secretary of the firm. "The leaps and bounds with which neon tubing has invaded the commercial sign field, the popularity of night baseball and football . . . all of these have been driving home to the public the idea that outside lighting is a simple, practical means of extending its hours of pleasure. When we saw frequent cases of home-made jobs of outside lighting, crude reflectors set over badminton courts and the like, where the makeshifts were both costly and dangerous to the users, we decided it was time to go after this kind of business."

"Going after" has consisted of a very simple advertising campaign involving inclusion of the suggestion of the possibilities of one's yards and grounds for recreational purposes in the company's newspaper advertising, and a direct mail campaign directed at householders in the better residential areas of Dallas. The mail promotion included a letter discussing the small cost of such installations and a small folder descriptive of suitable equipment.

Although the firm first entered this field to help bolster up volume in off seasons, the outdoor lighting business has grown to major proportions with the Paramount organization. "Badminton courts, croquet courts, ping pong, tennis, all of these sports are growing in favor," comments Mr. Cahn, "and almost any home offers a space suitable for one or more of them if equipped with illumination facilities to permit evening play. Garden fanciers, too, are good prospects; outdoor lighting permits them to work with their flowers and shrubs in the evening, and to hold lawn and garden parties.

"The average home owner," he continued, "wants a system which will not cost too much, and will still be efficient enough to meet his needs. The rank and file of such customers can be satisfied with one or more lamps of a type well known to all electricians, weather and insect proof, which can be sold for around $4 with a satisfactory profit margin. Under ordinary circumstances, when no brick walls have to be pierced and power is close for tapping, we can install two such lamps for $12, including cost of installation, and the illumination is adequate for a small game court. If more lamps are needed, the cost can be increased by the cost of



This unusual outdoor lighting installation was promoted by Paramount Electric Co., of Dallas. Before the promotional momentum of Paramount's sales organization was turned on the job, it was to include an illuminated sign and a few lamps. Paramount sold the builders on the use of lighting for decorative effect as well as illumination.

D. D. Cahn, secretary of Paramount Electric Co., Dallas, looks on while F. B. von der Hoya, president, examines a sign contract. At right, the foreman of the shop fashions a neon display.

the lamps and a proportionate increase in the charge of installing. This is small-order business, true, but such inexpensive installations are easy to sell, and are so simple to install that they can be handled very profitably. Further, with a practically virgin field at this time, we've doubled our business in this line by securing a large volume of residential illumination jobs."

Another profitable aspect of the outside lighting business has been found by Paramount in the installation of lamps of the "bug-killer" variety. Considerable demand for this type of light exists, and they are easily sold in connection with jobs of outside lighting of recreational facilities, thus adding extra profit to home illumination work. The entire field, believes Mr. Cahn, is an ideal one for the contractor to use in building up business in slack times. The spring is a particularly good time for the promotion of such work, since fair weather in the summer will put all outdoor recreational facilities into use. Moreover, in no other phase of electrical contracting does word-of-mouth advertising so well serve the contractor, for each illumination job is seen and admired by a dozen neighbors and friends, and several calls almost inevitably result from each job installed.

The emphasis which the firm has placed on outside lighting has also extended well into the commercial field, based upon the same thinking. "Since the public has become conscious and critical of nocturnal signs and illumination, lighting has now become a major phase of any construction job," says Mr. Cahn. "It is no longer an incidental item. We have found by contacting architects and builders that they are not unconscious of the importance of lighting, and have emphasized the fact that if there is an absence of harmony in lighting, if the reaction is not pleasing to it, a substantial portion of the investment in the sightliness of the structure is wasted. This has made specialization in the field highly worthwhile and profitable."

To try to go out and sell a certain type of neon tube or an interior job of fluorescent lighting requires that the man be a specialist, continued the contractor. An attempted demonstration by a man not versed in the equipment and its designing is simply a waste of time. But if a specialized electrician can discuss the lay-out in its entirety with the builder, and aid him to envisage it as a whole, he has created in the mind of the prospect a picture of a completed and desirable system, rather than a pinpoint demonstration of the qualities of some particular piece of equipment.

An example is an installation now in progress for a large oil company which is building its first super-service station in the Dallas area. Formerly, before the promotional momentum of Paramount's organization was turned on the job, lighting would probably have consisted merely of an illuminated sign. However, the company was persuaded by Paramount to consider the lighting from a decorative as well as an illuminative standpoint. As a result, the latest types of neon and fluorescent tubes are being used to outline the contours of the building, and at the pump section, a tower has been erected atop which is a reflector ringed about with tubes in colors, including "power" white, which both brilliantly illuminates the service area and achieves an unusual decorative effect.

Whereas formerly the job might have consisted only of putting in a conduit adequate to the support of a sign, Paramount's concentration on lighting enabled them to turn the job into the largest outside lighting contract they have yet handled. Further, the advan-

(*Continued on page* 32)

Facts Will Help You Sell

"Save your guesses for the quiz contests," says J. H. Brock. "Arm yourself with plans and data when you go out to sell your wiring prospects."

FROM the volume of electrical contracting business handled by the Brock Electric Company, of Lexington, Kentucky, it can readily be conceded that John Herbert Brock does a first rate job of promoting contracts. This fact is primarily due, declares Mr. Brock, to the fact that he goes well armed when gunning for business, armed with more than just a good sales talk about his company's ability to do a job.

In April, 1939, Brock was experimenting with a single fluorescent tube which he'd been using to light a drafting board, recording data as to its illuminative qualities, and its relatively low electrical current consumption. About that time he learned that the Baynham Shoe Company, of Lexington, was planning a new interior lighting installation. Under the plans which had been drawn up for electrical contractors to bid upon, the ceiling lights alone were to total 29,000 watts.

Mr. Brock decided not to bid on the conventional equipment, and went into conference with the general manager of the shoe company. When he went to the conference, he was armed, not with glib phrases and smiles, but with facts and data which he had accumulated about fluorescent lighting from actual experience as well as manufacturer's data. He laid the facts on the line, plus his estimate and suggested layout for such an installation in the Baynham store. He got the contract, and put in a lighting job the total wattage of which was only 4,900 watts, one of the first complete fluorescent installations in the United States.

That's an example of the way John Brock loads his firearms in the hunt for business. When improvements or new equipment in the electrical lines are needed, he doesn't wait for the customer to lay out plans and issue invitations to bid. He secures the data himself, lays out his own plans, makes the estimate from them, and presents a finished lay-out and bid, often before the prospect had given serious thought to the job.

"Pre-planned work," he believes, "while expensive, is a paying investment in sales promotion. Preliminary surveys and studies of different types of installation in different kinds of plant or establishment are going on all the time in our company, whether the plants are actually ready for the work or not. The plans and figures can be used as conclusive sales clinchers when they are ready, and often a complete study of one business can be used as an immediate entry to another contract in a similar type of concern."

J. H. Brock

The same pattern of surprising the prospects with a knowledge of their electrical problems more complete than their own is found through almost every major job handled by the Brock Company. Underground pumping stations and lighting plants for the stock farms through the Bluegrass region presents a wide market for contractors in that section. In 1939, Brock learned, by a comment on the facilities of Calumet Farm, that its efficiency and scope could be greatly increased with an electrical system to take care of farm-wide lighting and an electric pumping system.

He quietly went to work gathering data on the operations of the farm, where it needed lighting, how much, where it needed water and drainage, and how much. When he called on the manager of the farm, he had in his hand, not a calling card, but a complete lay-out for both lighting and electric pumping systems for the farm, complete to details which amazed the management, and an accurate cost estimate and bid, with data as to the probable value and savings produced by the installation. He got the job!

In a like manner, in the same year, Brock learned through one

(*Continued on page* 24)

A good example of Mr. Brock's "sell with facts" policy is to be found in this relighted shoe store. A 29,000-watt lighting job had been planned but Mr. Brock's carefully prepared data demonstrated to the owner that a more satisfactory installation could be obtained with only 4,900 watts of fluorescent lighting.

Now that You've Got the Job--

Careful planning and proper subdividing of work between shop and job will help prevent small delays and extra expenses from eating into the contractor's profit margin.

ASSUMING that a contractor's estimate is accurate and his bid soundly figured, he should come out of each job with a profit, *providing* work goes according to schedule and small delays and extra expenses do not eat into the margin.

Joe Williams, of the Williams Electric Company, Jackson, Miss., is a contractor who lays out the work of installing any job in a pattern which insures him against such possible losses, and by increased speed and expediency in executing routine work, usually comes out of a contract with a margin of extra profit.

Backbone of the firm's installation efficiency and economy is the manner in which work is subdivided between the shop and the job. Faced with a payroll expense for six or more top-flight electricians, who, with their helpers, cost $1.85 each per hour on the job, Williams gears installation to almost an assembly-line basis, arranging materials so that when they arrive at the job, they are ready to be put exactly where they're going, with all minor alterations and preparations already handled, with no minor make-up work taking up the expensive time of the electricians on the job.

This system has its beginning in a careful study of the plans, and a subsequent comparison of them with the building at the actual site of installation. Plans in hand, Mr. Williams goes over every foot of the building, visualizing materials as they will actually go into installation, making notes as to the characteristics of the job which will involve changes and alterations in materials.

The procedure then is to have all materials, wire, conduits, tubing, panels, switchboard, delivered, not to the job, but to the Williams shop. "This is at variance with the thought that delivery of materials by the supplier direct to the job saves the contractor transportation of them from the shop to the job," says Mr. Williams, " but after all, I have trucks that might as well be used, and the savings we can effect by doing the make-up work in the shop rather than on the job far outweighs the matter of hauling material out after its made up."

In placing orders for materials involved in a job, a careful delivery schedule is mapped out, so that all deliveries will come at as nearly the same time as possible. Make-up work then begins, and the job is under way, though actual installation expense of having electricians at the building has not yet started. In the preliminary survey of the building, Mr. Williams will have noted that perhaps a tap will have to come into the main conduit at a difficult place, in order to conform to safety regulations. This bend is put in the conduit at the shop, the tap installed; then all that is necessary on the job is to set it into place.

The securing and welding of steel tubing into the pattern required by the wiring plans is also completed in the shop, and the

Joe Williams' system has enabled him to come out of most contracts with an extra margin of profit. He gears installation to almost an assembly-line basis, arranging materials so that they arrive at the job as needed, ready to be put exactly where they're going, with all minor alterations and preparations already completed in the company shop. Many small losses are avoided by handling all unpacking at the shop.

finished assemblages transported by truck to the job, where nothing remains but to install it in the place to which it has been made to conform.

Unpacking Costs Reduced

Unpacking and assembly are other factors which make the preliminary work in the shop profitable: for example, a 1-40 circuit panel is ordered and delivered to the shop. For the shop men to unpack it and separate the interior parts from the cabinet takes approximately one hour, at the rate of 75c per hour. Had this same piece of equipment been delivered to the job, unpacked and separated there, it would have cost $1.85 for the expert labor there.

Further, delivery and checking of all materials at the shop is a safety valve against breakage or shortage of shipments. If materials are delivered to the job, a laborer may sign for them not noting a shortage or breakage. Then when it is later discovered, the man who signed for them might be gone, discharged or on another job, and responsibility for the loss cannot be affixed. When the material is received and checked in the shop, it is then checked out to the electricians on the job, who are then responsible for its arrival and installation in good condition.

A still further saving is that ordering for shop delivery permits a frequent command of a lower price by virute of greater quantity: if an order or group of orders are made out for drop-shipment to the job, no quantity other than that actually needed on the job can be included in the order. But if a quantity of material needed for a certain job comes near reaching the quantity required for a better price, the contractor can arbitrarily increase the order to get into the better discount bracket, and keep in stock that material not needed for the job in hand.

Storage in the shop of material not entirely ready for installation is a further safety measure against damage or disappearance, both of which are hazards if materials are left lying around the installation site until used. The Williams firm unpacks the panel board and main switch at the shop, and sends only the cabinet to the job at first, so that it can be mounted in the proper place. The interiors are retained in the shop until time for their installation.

The saving effected by handling material through the shop is not confined to wiring apparatus alone. Unpacking and assembling fixtures is a phase of most commercial installations which involves considerable time and does not require the expert attention of an electrician. On a recent job handled for a large school, some three hundred lighting fixtures were involved. The obvious move would have been to order them delivered direct to the school. But Mr. Williams had them shipped to his shop, and there unpacked and assembled. Some 75 man-hours were required for this task, at about 15 minutes per fixture. Had this been done at the job, by electricians at $1.25 per hour, the cost would have been $93.75. By doing it in the shop at 75c per hour, the cost was $56.25, a saving of $37.50, or allowing for time spent in trucking them to the school, a saving of $35 at the least.

Many difficulties can be avoided by doing all make-up in the shop; an instance is the handling of six-inch conduit. "I once saw a job where the conduit had been delivered direct to the job," commented one of the shop staff, "where, by making several cuts and re-threading the cut ends, nearly $50 worth of conduit could have been saved. However, the necessary equipment was not on the ground for installation, and the waste had to be made."

A parallel case handled by the Williams company found the short-cut already foreseen by Mr. Williams: the conduit was cut and re-threaded in the shop, and transported to the job already prepared to take advantage of the saving. "Our electric die and threading apparatus could not be carried to every job without a crew and a dray," says Mr. Williams, "and even then it would be foolish for it would put the equipment out of current service in the shop. So we always cut any conduits over 2" in the shop and do the threading there, and if there are any other cuts to be made, we know about it before we get the material on the job."

Special Truck Rack Used

A special conduit rack has been built on the Williams trucks to hold any assembly or pattern which has been made up in the shop. As work progresses, Mr. Williams keeps the shop a day ahead of the installation, so that each morning, apparatus and equipment needed is delivered, ready to install, to the job. The result has been a complete elimination of loss from breakage or disappearance, a hundred-percent record of finishing jobs according to contract, and a saving of at least 20% in labor alone by doing routine assembly and make-up in the shop.

Facts Will Help Contractors Sell

(*Continued from page* 22)

of the "listening posts" which he has carefully established through the trade in his area, that the R. J. Reynolds Tobacco Company, in Lexington, was in need of power improvements. He visited the plant, observed, asked casual questions. When he returned, it was with a complete analysis of the plant's power problem, and a prospectus for the installation required, which was awarded to him.

Advance Layouts Helpful

Last summer, the DeBoer Laundry and Dry Cleaning Company, of Lexington, decided to build a new, modernistic plant. Brock was presented with a copy of the builder's plans and asked to bid on the electrical requirements. After studying them, he refused to bid on the electrical lay-out as it was, and asked permission from the builder and building contractor to submit a layout of his own, which was, of course, gladly granted. After several days' hard work, he submitted a lay-out which was instantly approved, and the contract was awarded to him on a cost-plus basis, giving him a free hand and an assured profit. The contract included wiring to handle a stoker, air-compressor, Zoric cleaning unit of 300 pounds capacity, extractor, tumbler, air-dryer, mangle and several washing units, and motors to drive all the machinery, totalling 20 in all ranging from ¼ hp to 7½ hp.

The policy of going after jobs with completed plans and lay-outs has been the keynote of Brock's success for a number of years. When plants or users can be located where an improvement is needed, Brock gathers the necessary data about the requirements without disturbing the owner or scaring him by letting him know he is about to be sold something. When the owner is finally approached, it is with so complete an analysis of his needs and so complete an answer to them that there is usually only one outcome.

Satisfied Customers

Are an asset to any business. Ed Leonard, Savannah, tells how to keep them that way

COMPLAINTS and "comebacks" from customers who are dissatisfied with lighting fixtures after installation cost contractors time and money; by the same token, repeat business from satisfied customers is the backbone of a successful electrical merchandising operation. The elimination of the first factor and the achievement of the second have been accomplished in one hurdle by Ed Leonard, manager of the Peerless Electric Company, in Savannah, Georgia, by the construction and active use of a "model home" as a display room for domestic lighting fixtures.

The display room is an extension of Mr. Leonard's theory of business that it is profitable to the contractor to be certain that the customer buys exactly what he wants, even though it may entail more initial work. The keynote of this theory is found in his policy in dealing with commercial and industrial work: long ago, Mr. Leonard cheerfully offered to make an entire expensive electrical installation "on approval," subject to the satisfaction and decision of the prospective customer's management after the installation was complete.

Such an offer often decided the wavering prospect, who had hesitated at the expense of the work, and the job was done forthwith at Leonard's expense.

"It might seem speculative, but it really wasn't," is Mr. Leonard's comment. "The plant needed the work and could afford it, provided it did the job which was needed. I knew I could make a satisfactory installation, and I knew they'd accept it after it had been proven satisfactory."

Since it seemed impractical to extend this type of merchandising to domestic lighting fixture installation, Mr. Leonard decided to do the next best thing: he recreated as nearly as possible a typical home setting in his business space in which to display fixtures from which customers might make their selections.

"The success or failure of fixture selection hinges, finally, upon whether or not the fixtures harmonize with the surroundings of the home, and whether they look as the buyer had expected them to look," Mr. Leonard sums up. "A chandelier may have a very different appearance when suspended from a ceiling from that which it presented in the contractor's shop. In order to make sure that my customers could visualize as closely as possible the actual appearance their fixture selections would make in their homes, I endeavored to bring the home into my display rooms."

Ed Leonard, of the Peerless Electric Co., Savannah, has made many industrial installations with payment subject to the approval of the job and his claims as to what it would accomplish. So successful was this plan, that he has developed another plan to make residential customers equally satisfied with their purchases. Details of the plan are given in this article.

An unused portion of the firm's storage space was appropriated for the "model home," and in it Mr. Leonard created a four room bungalow, containing living room, dining room, bedroom, kitchen, and bathroom. Care was exercised in the selection of wall and ceiling paper for the rooms, patterns being chosen which were most typical of conventional rooms for the various purposes. Floor coverings were also put in which were suggestive of each part of the average home. The rooms were then equipped with appropriate fixtures, both ceiling and wall types, in a quantity large enough to display a wide range of styles, yet kept far enough apart to permit each type to be considered as an individual unit when attention was focused on it.

"Dissatisfaction among customers dropped off 90% after sales were made through selection of the 'model home'," states Mr. Leonard. "Builders and re-modelers could turn on the lighting apparatus they liked, read by it, look at it from outside the room, and get a true picture of how it would fit into their own plans. When fixtures go out of here now, I know they're going to stay sold, and that when the people have any additional electrical work to be done, they'll call on me to do it."

Shoppers demand speedy changes of lighting fixtures under consideration, Mr. Leonard decided, and in mounting the sample fixtures in the display rooms, he arranged outlets and switches so that any single unit can be turned on individually from a switch outside the door, or so that more than one can be turned on at a time, permitting comparison. The fixtures are changed frequently.

Methods of merchandising this display have been aggressive and modern. Direct mail has formed the spear-head of Mr. Leonard's attack on the new-home market, in inviting builders and prospective home owners to visit his "model home" to contemplate lighting apparatus. The firm has created literature illustrating the fixtures which are on display in the home, and it accompanies letters to prospects inviting them to use the facilities of the home. Another offering of the firm is free advisory service on electrical problems which may arise after the building is completed: whether the Peerless company gets the contract or not, Mr. Leonard gives his best advice and analysis to any problem brought to him.

The construction of such a display room presents no hazard to any contractor, for, as Mr. Leonard points out, almost any firm will have a few feet of warehouse or storage space which can be spared, and the investment has brought returns vastly above its cost. In Leonard's case, the entire structure was built in a vacant floor space, which was probably more expensive than if it had been built into an already existing corner. Even so, his total expense was under $1,500, which includes the elaborate stock of fixtures on display in the home. The entire structure was kept within a space of 30′ x 30′, detracting little from the usable floor footage. A similar installation could probably be made with much less expense under other circumstances, the contractor estimates.

22,000 Prospects For Service Work

(*Continued from page* 19)

work is concerned with the cultivation of the real estate companies, whose holdings in rental and commercial property present a vast market for current and periodical wiring and maintenance service. Individual data is accumulated on the individual properties of the various companies, as well as reference cards filed on the companies themselves. By working with the realtors, the solicitors learn of repairs and rewiring needed in many residences where the maintenance is in the hands of the tenant or lessee, as well as securing contracts direct from management concerns who are handling maintenance themselves.

The air-conditioning division of the reference file is the newest, and consequently, the smallest contingent of the firm's prospects, but is growing in size and value. Data on principal installations in the city, such as in the city manager's office, the office of a large chain-store headquarters, and similar important installations, are recorded; Eastern service men are competent to service and repair this equipment, and active solicitation is directed at this market, with frequent service jobs, and numerous profitable periodic inspection contracts the result.

One permanent service contract has subsequently been the source of a vast amount of wiring business in addition to extra repair work. The firm solicited and secured a complete service contract with a large refrigerator distributor, to handle all motor service and repairs for units sold by the distributor and his dealers. This in itself swelled the shop business where three men are kept constantly busy rewinding motors and others handling other repair work.

In addition, it provided an entre to the most difficult of all work to locate, residential wiring and rewiring. Service men calling to handle an appliance repair job under the arrangement with the distributor would encounter other work; needless to say, they were trained to look for it and obtain all information. A solicitor could then follow up and secure the order for the additional work. One such service call found the home-owner considering the complete rewiring of his house: a call from an Eastern solicitor clinched the job.

An interesting and effective plan of encouraging the electricians on the company's large staff has been put into effect to stimulate their outside activities on behalf of the company. With the company handling about 15,000 jobs a year, considering each service or repair call as a separate unit, a vast amount of outside work is necessary for the workmen handling it. Shop men are employed by the week, doing steady-output work such as motor rewinding and equipment repairs. Electricians for outside work are hired and compensated on an hourly basis, working on calls and orders received through the company's office. Their job tickets are the record of their operations, from which charges to customers and compensation to the mechanics are derived.

In addition, Mr. White has a large bulletin board on the wall near his desk, on which the outside men record the total of the productive hours put in each day, bringing the daily records to a total at the end of the month. This record is for actual revenue hours, which were spent in such a manner as to be billable on the company's service ledger. At the end of each month, the high man receives some award; perhaps one month it may be a pair of good shoes, a cash prize of $5 or $10 another month. This system has two effects, both the incentive of the prize, and the stimulus to the men in seeing the record of their individual accomplishments publicized.

Inspectors Hear Code Preview

Georgia electrical inspectors hear well-known Code authorities discuss requirements effective in 1940

NEARLY sixty members of the Georgia Chapter, IAEI, and their guests gathered at the Hotel DeSoto, Savannah, Georgia, for a two-day meeting on February 9 and 10. The principal feature of the meeting was a series of discussions outlining changes in the National Electrical Code for 1940 approved by the Electrical Committee. A considerable number of Rural Electrification Administration inspectors were in attendance and much of the discussion centered about wiring and inspection problems in rural areas.

With Chairman U. A. Clifford, superintendent Light and Water Department, Cairo, presiding, the meeting was opened with a welcoming address by C. C. Curtis, president, Savannah Electric and Power Company. Mr. Curtis was followed by Victor H. Tousley, national secretary, IAEI, Chicago, who presented a "Preview of the New Inspectors Manual." This manual is being prepared for use as a guide to electrical inspectors. It will offer valuable suggestions as to how inspectors can advance their standing in their work, improve the routine methods of their office, etc. When completed, it will represent the methods and opinions of the leading inspectors.

"High Lights of the 1940 Code," was the topic of Arthur L. Abbott, National Electrical Manufacturers Association, New York City. The first business session of the meeting was concluded by Dewey L. Johnson, superintendent of Electrical Affairs, Atlanta, who spoke on the "U. S. Conference of Mayor's Interest in the Code." Mr. Johnson explained how the conference of mayors first became interested in the Code and later succeeded in obtaining a representation on the Electrical Committee. He pointed out that the conference still hoped to obtain additional representation.

Guest speaker at an informal luncheon on Friday was T. J. Fleischer, vice president, Walker Electrical Co., Atlanta. Mr. Fleischer spoke on the outlook for electrical business in 1940.

The Friday afternoon session was opened with an address by George B. Sawin, National Electrical Manufacturers Association, New York City, on "1939 Experience with State Electrical Laws." Mr. Sawin's outline of legislation introduced before state legislative bodies during 1939 and the disposition made of these bills was received with considerable interest by those in attendance. Much of the discussion following Mr. Sawin's talk centered about the possibility of enacting a licensing and inspection law for the state of Georgia.

Article 300 of the 1940 Code was the subject of a talk by Howard H. Weber, U. S. Rubber Company, New York City. Mr. Weber presented a detailed explanation of the new types of insulated conductors that will be recognized by the 1940 Code. He emphasized especially the need for careful study of these new products and their characteristics by both electrical inspectors and electrical contractors. He warned that voltage regulation would become increasingly important and should receive more consideration in the design of wiring installations.

"An Adequate Wiring Plan for Georgia," was the subject of Robert Wardle, Georgia Power Company, Atlanta, who concluded the Friday afternoon session. Mr. Wardle made the first public announcement of a new cooperative adequate wiring plan which is be-

ing initiated by the Georgia Power Company for use in the territory it serves. Although the plan at this time does not include the organization of an adequate wiring bureau or a certification program, it offers liberal cash subsidies to the builders of adequately wired and equipped homes which should greatly stimulate the interest of both speculative builders and individual home builders in adequate wiring.

The Saturday morning business session included two feature talks: "The 1940 Branch Circuit and Feeder Rules," presented by Joseph Whitner, Southeastern Underwriters' Association, Atlanta; and "1940 Code Limitations on the Use of Building Wire in Conduits," by A. Penn Denton, consulting engineer, New York City.

Extensive Changes in 210-220

A study of the provisions of Article 210 and Article 220 as approved by the Electrical Committee at its December meeting shows quite a number of changes in these Articles, some of which are very important, reported Mr. Whitner. The most important of these changes can be grouped into two divisions: (1) The changes in the characteristics of the various branch circuits, and (2) the method of calculating loads for determining the number of branch circuits and size of feeder conductors.

The changes in branch circuits, in reality, are merely a consolidation of branch-circuit rules now found in Article 210 and section 4247 without change in substance. No material changes were necessary in the 15, 20 and 25-ampere circuits as these are the circuits of Article 210 referred to in section 4247-a-1 and b-1, the 25-ampere circuit being the largest circuit on which portable appliances can be grouped.

The 35-ampere and 50-ampere circuits of the 1937 Code are heavy-duty lighting circuits only, whereas similar capacity circuits were permitted, with certain restrictions, for appliances only under section 4247-b-2. Lights are still not permitted on these circuits in dwellings, but these circuits will be permitted as fixed appliance circuits in all class property with the following limitations: The 35-ampere circuit will be permitted to supply a group of fixed appliances with a total rating of 35-amperes, if circuit supplies only appliances, or 25-amperes, if in other than dwellings, it supplies lighting (heavy-duty lampholders).

The only appliances the 50-ampere circuit will be permitted to supply will be a group of fixed cooking appliances or a fixed range and water heater with a total rating of not more than 50 amperes. Combination lighting and appliance loads will not be permitted on this circuit. Appliances that cannot be grouped on a circuit under these conditions must be supplied by an individual branch circuit protected by overcurrent protection rated at not over 150% of the rating of the appliance, except that motors on motor circuits are still cared for in Article 430. The Code will include the rules for such an individual branch circuit which will include the provisions of section 4247-b-3. These changes care for all the provisions of section 4247; therefore, this section as shown in the 1937 Code will be deleted from the new Code.

Watts per Sq. Ft. Rule

The second group of important changes deal with the expansion of the "watts per square foot" method of calculating branch circuit loads to a number of occupancies in addition to dwelling type occupancies. These will include apartments, armories and auditoriums, banks, churches, clubs, hospitals, hotels, office buildings, residences, restaurants, schools and stores; the "wattage" varying according to the class occupancy. To this load would be added the appliance load which, for dwelling occupancy of over 1000 square feet, would be 1500 watts; in stores, the show window lighting load at not less than 200 watts per linear foot would be added. This determines the calculated load, which is then used for determining the number of branch circuits required, and to which specific demand factors (similar to those of present Table 17) may be applied for determining the feeder load and corresponding feeder conductor sizes.

For occupancies not included in the above list and which form a relatively small per cent of the installations, the old method of assuming an ampere load per outlet as specified in present section 2107-b will be followed in determining the number of branch circuits, and in such cases the size of feeders will be determined by the load served without application of demand factors, which is in accordance with the provisions of the 1937 Code. (See other Buildings or Occupancies on page 281 of the Code). There will be three exceptions to the above—garages, storage warehouses, and industrial commercial (loft) buildings. These will be calculated as prescribed by the 1937 Code.

A study of the provisions of the proposed 1940 Code will show quite a number of other changes in Articles 210 and 220, however, these are mainly for clarification, the above being the two major changes, concluded Mr. Whitner.

Standardization Recommended

A letter from C. S. Whitaker, city electrician, Durham, N. C., and president of the Southern Section, IAEI, was read to the Chapter by the secretary. Mr. Whitaker expressed his regrets at being unable to attend the meeting and urged the Chapter to make one of its objectives the simplification of wiring methods.

"While the public demand has brought about mass production with accompanying higher standards in most industries," wrote Mr. Whitaker, "it is questionable whether or not the standards in the wiring industry have not actually been lowered, particularly if we take into account the increasing use of electricity. This is in sharp contrast to the public's demand for higher grade merchandise of all types.

"The Chapter should be able to exert favorable influence by adoption of uniform practices which cover a single state. If a single building occupancy type is treated electrically the same in a hundred cities and counties, there is little doubt but that this standard of installation will soon have public sanction. If the number of methods employed are limited to that of actual need, it seems reasonable to suppose that the industry would become familiar and proficient with these fewer methods, and that this would result in a spread of information to others concerned.

"Whether or not this sort of Chapter activity can achieve the desired results will never be known unless it is tried. Since the policy of simplification has worked with other industries to the satisfaction of the public, it seems entirely reasonable to suppose that the public would embrace an opportunity of knowing and buying standard electrical wiring." (*Continued on page* 33)

Something to Shoot At—

Part Two of a Series on Effective Sales Contests

More important than the guise of the contest are the technique and mechanics of operating it correctly. In this article consideration is given to the establishment of quotas and a basis of competition between salesmen.

MANY and attractive are the vehicles with which cold selling may be glamourized into a colorful and interesting contest form. Contests may be laid out as horse races, gold rushes, beauty contests, yacht trips, western round-ups . . . as was said in the previous article, the sky is the limit of the contest executive's imagination. Much more important than the guise of the contest, however, is the technique and mechanics of operating it correctly, and a single set of rules governing this technique can be set up to apply to the pattern of almost any type of contest.

The sales manager's job in running a contest contains five points: establishing a basis of competition, selecting the contest, adapting it to his sales staff's personalities and problems, setting up prizes, and selling the contest to the participants.

The basis of competition, it has been shown, must be one which eliminates the inequalities of different men's products, territories and limitations, yet still preserving the element of personal competition, always dear to the hearts of energetic salesmen. The most satisfactory means of levelling the disparities between salesmen's individual potentials has been determined to be the establishment of a goal, or quota for each man compatible with a reasonable expectancy, and let his standing in the contest depend upon how nearly he accomplishes this individual task. This reduces each man's work to a denominator common with the rest, so that their contest scores will be a true relative reflection of how they stand on a competitive basis.

"Quota" is generally an unpopular term; psychology-wise sales managers more frequently use "goal" or "loading" or "expectancy." Call it what you will, a quota should be set up for each individual participant in the contest for the total duration of the contest. Quotas should not be set unreasonably high, so as to present a seemingly unsurmountable obstacle in the man's mind; on the other hand they must at least reach a level which, if attained, will represent enough volume to satisfactorily absorb the man's salary and expenses under the terms of the arrangement by which he is compensated. A contest will be more successful if quotas are set so that their achievement will represent bonus earnings, that is, just slightly above the requisite amount of business to absorb the man's compensation.

Quota figures are simply built up; the process begins at the reverse end and progresses toward the final figure. Assume you're planning a three months' contest: that's thirteen weeks. If Jones is a commission man, look up his earnings for the same months in the last couple of years, and providing they have been at a satisfactory living wage, use them as a yardstick for determining his quota. Say he's been averaging $35 a week: if you pay him 10% commission, that means he needs $350 worth of business a week in order to pull his weight. Add, then, about 10%, or $35, and you'll have a quota of business which, if the man achieves it, will represent earnings slightly in excess of his norm.

If Smith is on a straight salary of $30 a week, then its plain that you need $300 worth of sales a week out of Smith in order for him to pay his way: make his quota $330. Here, too, enters the element of adapting the contest formula to your own organization: every dealer has his own basis for compensating his men, some paying a straight 10%, some 15%. For contest quota purposes, however, the end is simply to establish a figure which, if achieved, will present a satisfactory return to both proprietor and salesman.

The salesman should always be consulted about the setting up of his quota, rather than having an arbitrary figure shoved down his throat. He may have some good reason for wanting it altered in either direction: there may be fac-

tors on his particular prospect list which should be taken into consideration. In any case, he's got to be entirely satisfied and happy about the goal set for him in order for him to work toward it enthusiastically.

Here enters the factor of putting each man into competition with himself. The contest must be arranged so that *every* man who makes quota wins something, so that no matter who is high man, there is also a reward for every salesman who comes up to the expectancy established by the boss; there's his incentive for turning in the business you expect of him. That's what you tacked that extra 10% on his quota for, to enable you to stand a little bonus if he produces bonus business.

Of course, there must also be competitive prizes, to keep the spirit of competition, but some sort of routine awards should be available for all quota-busters. Other prizes can be based on the percentage in excess of quota made by each man, with the high one, two, or three getting the major prizes. This means that even if Smith did crack that apartment house job, and sell a hundred units, thereby gaining a terrific lead, Jones doesn't give up hopelessly, for he still has his own quota to crack with a prize on its nose.

Too many prizes, you say? Look what you're getting for it. The contest is devised so that you've got extra business on the books before you put out a single prize. Neither you nor the men can lose.

The basis this leaves the men on is that they're competing with a quota figure for themselves, and on a basis of percentage of quota with each other. If Smith should be expected to normally produce $400 worth of business a week, and Jones $300, then obviously competition shouldn't be on straight dollar volume. But by setting their quota at those figures, and estimating their contest standing on the basis of the percentage which each makes of his quota, then they're on a fair footing of competition.

Keeping the records in a contest based on this system is simple. It involves using one record sheet for each week's operation of the contest; on this sheet is contained every bit of essential information concerning each man's progress, standing, and weekly business. The sheets can be laid out as illustrated, run off on a mimeograph or ditto machine, or simply typed up with carbon paper.

Name	Weekly Quota	Multiple	Week's Sales	Week's Points	Sales Total	Points Total	Week's Standing	Contest Standing
Jones	$400	.25	$450	113	$450	113	1	1
Smith	$300	.333	$320	103	$320	103	2	2
Brown	$350	.286	$300	86	$300	86	4	4
Greene	$250	.4	5250	100	$250	100	3	3

The first column, of course, is for the men's names. Alongside it is a column for his weekly quota, and next to it is his multiple. The multiple is simply the figure which, when multiplied by whatever his week's volume is, will translate it into the correct percentage of his quota. Multiples are achieved by dividing the man's quota into 100. For instance, if Jones' quota is $400, then 400 divided into 100 will give .25, so .25 is Jones' multiple. If, then, he gets $400 worth of business in a certain week, 400 multiplied by .25 will give 100, meaning 100% of his quota, or 100 points in the contest. If he gets $300 worth another week, 300 times .25 is 75, which is his correct percentage of quota, and the number of points he made that week.

Thus, if Jones with a $400 quota and Smith with a $300 quota, both make their expectancy in a week, they are even as far as the contest is concerned with 100 points each, which is the aim of the contest. Using these "points" as a medium of keeping the men posted on their standing also avoids disclosing to them the others' quotas, which might cause dissention. The record sheet can be made up in the form shown above.

Contest Records

This sample form is for the contest's first week: in succeeding weeks, the totals from each week would be carried over into the points and sales total columns. Thus, at a glance, you have just how much business has been done by each man each week, for the contest period to date, what percentage of quota each is achieving, where each stood each week, and where each stands in regard to the run of the contest. Incidentally, to save a little work, the man's names, quotas, and multiples should be duplicated at the start on all the forms, since they're constant factors, and the other figures can be filled in from week to week, using a new sheet each week, bringing totals forward. Many contest users save these records of each contest from year to year, and some maintain such a record of sales permanently, finding in it a valuable finger-tip reference to each man's operations.

The main achievement thus far is that, for contest purposes, dollars have disappeared and have given place to points, which is the first step in cloaking the business of selling into contest guise. Points can be used as just points, to accumulate a total with the winners of the competitive prizes being holders of the high totals, or they can be tied in with the contest vehicle, so that each point becomes a steer gathered into the salesman's corral in a western round up, or a mile in a boat race, or votes in a beauty contest, or anything else. Needless to say, they should be so used to contribute to the color of the contest.

This is the skeleton of the contest; this framework can be used as the basis of a thousand different colorful and amusing settings, needing only the allocation of prizes and the selection of an atmosphere for each contest.

Selecting a contest vehicle is pretty much a matter of the sales manager's good judgment, in his knowledge of his men, to select one which will appeal to them, stimulate their imagination, and not be too complicated. The salesmen's ages, dispositions, interests, geographical locations, all are factors in choosing a contest atmosphere which will interest them; young salesmen usually like virile sports, with which they are familiar, baseball, football, boxing. Older, more mature men, respond most readily to a humorous vehicle, such as putting them in competition for the title of State Beauty Queen, or to a setting with which they are not familiar, such as making Georgia salesmen cow-boys in a Montana round-up, or Oklahoma men being called sailors on a ship.

(*Continued on page* 32)

Personalized Service Policy

Dodge Electric's sales manager endeavors to participate in the closing conference of every sale. This is flattering to customers and keeps him familiar with performance of his salesmen and basis of every deal.

IN the calendar year of 1938, the Dodge Electric Company of Tulsa rang the cash register for a volume of $84,000, but in the year of 1939 just closed, the volume was stepped up to $117,000, and the increase of $33,000 is credited partly to improved business conditions, but principally to a policy of wringing all the personal contact possible from each transaction with every customer.

It is a policy that has been receiving more and more of the attention of Jack Alter, owner and manager, who declares a firm conviction that his increased volume resulted from his persistence in educating personnel on the application of such a policy.

"Last year was an excellent illustration of what personalized service can do, in our company's operations," says Mr. Alter. "Yet we hope to get even better results. There is practically no limit.

"But it is a policy that cannot be installed overnight. In our organization, we have been developing the application of the idea, to suit our specific needs, over a period of years, ever since I took over the business. Last year, we just seemed to click and the explanation probably lies in the fact that there has been little turnover among employes. It is a good organization, closely knit, working together."

The Dodge Electric Company is strategically located and the character of the business is appropriate for the application of such a policy, for the firm does no contracting work—its volume must be produced from appliances and service. Eighty per cent of the volume, says Mr. Alter, is derived from the sale of electric refrigerators, electric ranges, radios and washing machines, and 20 per cent of it from the work of an aggressive service department.

And the sales and service departments are so closely co-operative in operation that a prospect cannot possibly slip through their net-work of alertness. This is how the plan is applied by Dodge Electric:

"There is a foundation in every sale, of either appliance or service," says Mr. Alter, "upon which the personalized service policy can begin to function.

"In the case of an appliance, we take particular pains to avoid overselling the merchandise. We make no misstatements about the merchandise, therefore we know that we have the confidence of the customer and that generally means that the customer is our friend.

"After the sale is made and the appliance installed, the personalized service policy really begins to function. The salesman makes a call almost immediately, another within ten days and another not more than six months later.

"That is the minimum rule and, of course, the salesman makes more or fewer calls depending upon circumstances and in the course of those calls he has opportunities to estimate the need of the customer for additional appliances and the customer's capacity to pay. The customer may be a prospect for one or several of the appliances we have for sale and the salesman cultivates this additional prospect according to the dictates of his observation, or he might suggest that some appliance could be made more useful by the attention of our service department."

Mr. Alter says his salesmen, by following that logical line of procedure, produce a surprising amount of business for the service department. But there are other calls by salesmen that are of equal importance to the company.

"It often happens," he points out, "that we make an installment deal that we know to be just a little weak. All dealers take those risks, I suppose.

"Often in such cases we send a salesman to make a call just a day or two before the payment falls due. The salesman explains that he is checking to make sure the appliance is giving satisfactory service and we have found that such calls by salesmen play an important part in minimizing our

Jack Alter, owner and manager of one of Oklahoma's outstanding appliance stores, goes over a trade with one of his men.

credit losses. One of the principal excuses for delays in making installment payments is that the appliance is not giving satisfaction. And in the salesman's call there is an inoffensive reminder that the payment date is near."

Mr. Alter notes that there is very little difference in the application of the plan to his service department.

This department is constantly striving for business, yet there is never a misrepresentation. If a customer calls for service, the service man is bound by Dodge Electric policy to give an honest opinion of what the service department can do for the appliance and a close estimate of what the cost will be. Then if the appliance can be serviced for less, the customer gets the benefit, for Mr. Alter insists upon the service department minimizing the idea of long profit and emphasizing both the theory and practice of service.

"That pays dividends, too," he says, "because the service men get into homes that a salesman could not enter 'cold.' In that way our service men pick up many prospects that they turn over to the sales department and in this field the service man can often be of more value than half a dozen salesmen.

"He has the opportunity to gain for the firm the respect and confidence of the customer. Then if the customer becomes a prospect for a major appliance, the service man has already broken down an important barrier — that initial sales resistance that must be overcome in the get-acquainted period."

But whether the customer contact comes through the sales or service department, the personnel is constantly following the plan of using the user for the production of prospect names. When a salesman or service man has gained the confidence of a customer, it is fairly simple to get that customer to divulge the names of friends who often only need a little sales stimulation to produce an appliance sale.

Mr. Alter capitalizes, too, on location. His attractive store is just at the edge of the Tulsa shopping district and next door to the offices of the local power and light company—prohibited by law from selling appliances—where hundreds pass daily on their way to pay the light bill. So while his competitors open their doors from 9 to 6 daily, the Dodge Electric is open from 8 to 9. The result is many drop-in prospects who, even if they buy nothing, carry away a favorable impression of the institution. And there is seldom a floor day in which a salesman is not well rewarded.

Mr. Alter sums it up this way:

"We prefer to be long on delivery and short on promises, so we make no promises on which we can't deliver.

"When a customer buys an appliance, say for $150, that investment has probably resulted from many family conferences and possibly some sacrifices, so a customer expects not only good service—he is certain to be proud of his judgment and his investment. It is only sensible that we should do all in our power to justify that pride, flatter that judgment and perpetuate a friendship. Furthermore, with installment terms what they are today, the dealer who survives must make sure that his customers are satisfied."

When it comes to the point of closing a sale, the personalized service policy comes into play again. Mr. Alter tries to participate in the closing conference on every sale. It keeps him apprised of the performance of salesmen, flatters the customer by bringing the head of the firm into the transaction and gives him a chance to measure the character of the prospect.

Then he can make each deal stand on its own merits, by either tightening or relaxing the requirements, after he has weighed the human elements of the transaction, for he knows that personal contact with the customer is fundamental in making sales that endure and pay dividends.

Outdoor Lighting Specialization

(*Continued from page* 21)

tage to the customer is obvious in that no one else has to come in and finish the sign installations when the contractor is through putting in the wiring: the entire job and responsibility rests with one firm.

"Lighting is moving forward so fast and is becoming so essential a part of merchandising that it must be considered as a separate unit, rather than just one of several component parts of a construction job," believes Mr. Cahn, "and it is this school of thought that we are pushing among the building and architectural circles. The man who is investing money in a home, a store or a building, or in the remodelling and modernization of one, can no longer overlook the importance which illumination will play in his success or his comfort.

"He can virtually undo every good accomplished by his project if he neglects it, and he usually welcomes expert, specialized service and advice in planning his illumination facilities. Nor do the other services resent it; rather they also welcome a specialized factor in handling the lighting. Architects and builders welcome a contractor into their circles who is fully prepared to discuss and plan every phase of illumination from the smallest lamp to the most elaborate exterior sign. A further step in this direction is the adding of an electric sign building department to the contractor's facilities: that is up to the individual, of course, as to how heavily he wishes to concentrate on this type of business. But it is a telling example of how far a promotionally minded contractor can go by specializing in outside lighting."

More Effective Sales Contests

(*Continued from page* 30)

Requirements of a good contest vehicle are very simple: the atmosphere must be colorful and have possibilities of drama; there must be a definite, tangible goal or motivation, such as sailing a boat to a given point, or digging to the bottom of an oil-well; and there must be enough esoteric terms connected with it to make it possible to translate all functions of the business into terms of the contest.

For instance, in a round-up contest, the sales manager becomes the ranch foreman, the salesmen are cow-hands, the orders are steers, and tough prospects become strays. Little sales may be called dogies, lost sales become mavericks, the show room the water-hole, the street is the range, and so on ad infinitum. A salesman no longer "takes an order," he "ropes and brands a steer." It is particularly important that the contest's setting lend itself to plenty of colorful language and terms used only in that setting: the reasons for this will be covered in the discussion of merchandising the contest to the salesmen in the next issue.

Effective Selling For Contractors

(*Continued from page* 16)

action, they can be applied in various ways. Just one instance to illustrate this point: An insurance salesman had worked out an intricate and difficult insurance problem for an important client. The contracts had been drawn up, every point had been explained and agreed upon, everything was ready for signature. The client hesitated, then said, 'I'll need time to think this over a bit." The salesman, sensing that there was no real reason for delay, said, "Fair enough, I'll wait." He thereupon walked over to a window and stood there looking out. The client fidgeted for a minute or two, glanced over the papers again, turned to the agent and said, "All right. You win," and signed.

That agent's action had moved the client to a decision—to take the final step. That was the important step but not the only one, for decisions are not reached by a single bound. All through every negotiation the effective salesman uses procedures and suggestions that impel the prospect to step-by-step action during the interview. He makes his prospect an active partner all through the journey and leads him to a decision.

Planned preparation! Clear presentation! Procedures that induce action! These are the prime essentials of successful salesmanship. No salesman can be really effective unless he employs them intelligently. Every salesman owes it to himself, to the organization he represents, and to his prospective client, to be fully equipped to do that kind of a selling job.

Moreover,—and here's the important point—the science and practice of effective selling are no hidden secret, nor the exclusive property of an elect few.

They are open to anyone who wants to learn, and far more easily and at less cost of time and money than is commonly supposed, which leads to our next quetioon:

There's no mystery about that. Just employ the same plan that has been used by many large organizations which have tackled successfully the problem of helping salesmen do a more effective selling job: organizations such as Johns-Manville, National Retail Lumber Dealers Association, the United Typothetae, National Lead, The American Gas Association.

Each of these organizations found the answer to the problem of increasing selling effectiveness right in its own bailiwick. Each association polled its own selling experience and combined it into a sales-improvement program, developed it along the lines described above, and made it available for the benefit of all. The electrical contracting industry can do the same. You have plenty of sound selling right here in your own industry. But most of your real sales-making ideas and methods go to waste, because they are not collected and made usable by all, so that every contracting salesman may apply them in going after, and capturing the business that stands on side—waiting to be sold. Why not combine that experience and out of it build a real sales-development program available to all electrical contractors and their salesmen?

Inspectors Hear Code Preview

(*Continued from page* 28)

Following the annual report of the Chapter presented by the secretary, the chairman received reports from the resolutions committee and the nominating committee. Officers for 1940 selected by the nominating committee were elected unanimously. Those elected were: chairman, F. H. Benefield, county electrical inspector, Fulton County, Georgia; 1st vice chairman, C. V. Reynolds, electrical inspector, Savannah, Ga.; 2nd vice chairman, Robert B. Alford, field engineer, Georgia Public Service Commission, Atlanta; chairman executive committee, W. I. Foote, Sr., electrical inspector, Griffin, Ga.; executive committeeman, R. E. L. Shirley, assistant superintendent appliance repairs, Georgia Power Company, Atlanta; executive committeeman, Arnold T. King, REA inspector, Marietta, Ga.; and secretary-treasurer, Carl W. Evans, editor, ELECTRICAL SOUTH.

Sales-Minded Contractor

(*Continued from page* 18)

ment, the customer's mind is conclusively put at ease as to whether he has received a good job or not. Customer confidence can be built to a tremendous degree by going out of the way to make the job seem ultra-satisfactory."

Another point in which the service department works closely with the sales department is in the completion of repair jobs upon the time promised by the salesmen and solicitors. The psychology of having a job finished when promised is very important, believes the company; while it actually may not matter whether a repair is completed by a certain time or not, the impression made looms large in the customer's mind.

"This is the man I was telling you about, Dear . . . . wants his building rewired!"

Lighting for Use and Display In Appalachian Building

THE Appalachian Electric Power Company, Bluefield, West Virginia, celebrated the New Year in its new spacious quarters opposite the post office on B'and St. The six story brick building was purchased by this utility and completely remodeled to house its main division office headquarters. In fact, a sum about equal to the original purchase price of the property has been expended in making alterations and modernizing the building, providing complete air conditioning, and especially adequate lighting facilities.

To J. C. Smith, Jr., lighting engineer for this company, goes the credit for the most outstanding modern lighting installation in this part of the country. He is responsible for the unusual and attractive lighting design and installation in the new building.

In lighting the new Appalachian Electric Power Company building it has been the company's aim to use as many different types of lighting fixtures as possible in order to have a convenient display of lighting fixtures so that any other building or store management can get an idea of the lighting equipment best suited for their use.

The outside of the building is illuminated from a bank of twelve 1000-watt flood lights which are scientifically designed to give an even coverage of the white brick portion of the office building. This is a new field in electrical advertising in the city of Bluefield, this being the only totally-illuminated building front of any consequence in this territory.

Above the entrance doors is a sign which reads: "Appalachian Electric Power Company." This sign is made of porcelain enamel metal. Each letter in this sign is a channel which has behind it a tube of white fluorescent neon. The light from this source illuminates the background rather than the letters of the sign, consequently, makes the letters stand out in silhouette.

100 Foot-candles in Lobby

The building lobby is illuminated with 26-control-lens boxes, each having four 200-watt lamps in it. This provides a general lighting of around 90 to 100 foot candles. The foyer is lighted with fluorescent tubes from a cove channel along the sides of the wall. A warm atmosphere is developed in this room by the use of gold-colored light. The color effect in this room can be changed by merely changing the fluorescent tubes to a different color.

Of especial interest is the auditorium. This room is illuminated by four trough-lighting fixtures running the entire length of the room and fanning out from the stage. Each of these fixtures contains thirty-five 100-watt incandescent lamps. The stage has disappearing foot-lights in three colors. The border lights are also in three colors, making it possible to get lighting effects on the stage similar to that which one might expect on the stage of a good theatre. These lights, as well as the house lights, are all controlled by dimmer equipment, backstage.

The model commercial kitchen installed backstage is lighted with modern plastic indirect lighting fixtures. All offices and rooms on the first floor are illuminated with modern indirect lighting fixtures. The general sales office is equipped with a new type metal ceiling, which is designed primarily to increase the illumination in this room. The trade name for this ceiling is "parabolume." This gets its name from the fact that the curves and angles on this ceiling approach the effect of a ceiling made in the shape of a parabola. In other words, all the light rays from the lighting fixtures, at whatever angle they strike the ceiling, are reflected in a straight line down on the working plane.

Featuring light intensities as high as 100 foot-candles, Appalachian Electric's new Bluefield, W. Va., building is a model of modern lighting design. Above, floodlighted exterior; center, a view of the 100 fc. lobby; and right, the spacious home service auditorium and model kitchen.

This is a very recent development in general office lighting.

The rest of the offices in the building are illuminated with indirect lighting fixtures, providing a minimum of 35-foot candles.

In the drafting room and accounting rooms where more critical eye work is necessary the illumination averages about 75-foot candles.

All different types of proper lighting can be found in this building. Mercury vapor lamps in combination with Mazda lamps are used in some of the offices. This gives a quality of light which approaches most nearly that of true day light.

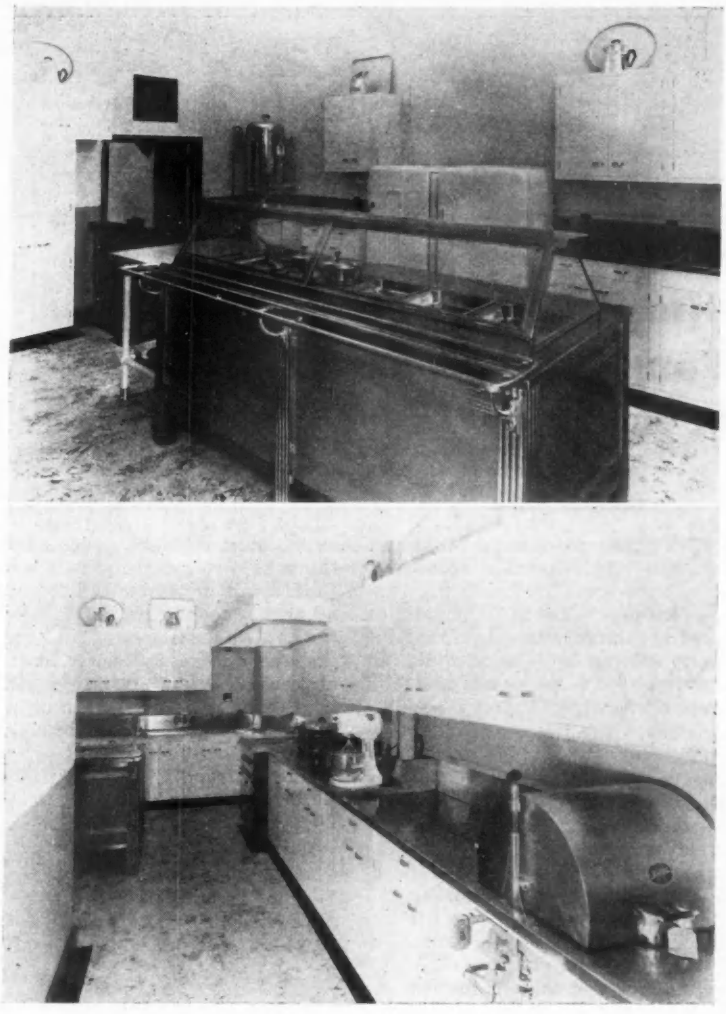
New Bi-post Lamps Used

Due to the architecture of the building, the ceiling being low, it was necessary to use smaller fixtures than those which were designed to take care of the regular 1000-watt incandescent lamp. Where this was the case the designers made use of the new bi-post 1000-watt lamps which are smaller than the old type 1000-watt lamps. Other light fixtures make use of the silver bowl lamps.

The Appalachian Electric Power Company, in keeping with its policy to post Mrs. Housewife on the latest and most modern methods and equipment for food preparation, has provided in connection with the new auditorium the most modern and up-to-date facilities in the two Virginias. Behind the stage, leading directly from the auditorium, is what might be called a "studio" or "preparation" kitchen. In this kitchen, the power company has tried not only to provide a scientifically designed kitchen with complete modern facilities for food preparation, but has provided every convenience possible for the preparation of large banquets by local civic groups.

The company's new auditorium has been designed with the view in mind of furthering the demonstration of modern electric equipment and performing a service for the community by providing a meeting place for its friends and customers. The firm has always been a pioneer in the advancement of new electrical equipment, and the new auditorium will offer excellent facilities for the Appalachian company as well as the electrical dealers, to demonstrate the use of new appliances for the home and for commercial application.

Past experience has proven to the Power company the widespread popularity of the public's acceptance of using the assembly facilities offered to them by the company. The company welcomes educational, religious, charitable and civic organization meetings, dinners and benefits. Private groups, lodges, fraternal organizations and clubs are also invited to take advantage of the auditorium facilities. The new auditorium has facilities for the accommodation of 200 people. The company equipment consists of portable chairs, banquet tables, dishes, silver, glasses, electric ranges, kitchen utensils, electric dish washer, electric steam table and a large electric coffee urn. The company also has available twenty card tables for those who like to play games.



Both domestic and commercial cooking equipment are given good display space in Appalachian's new Bluefield building. (All photos on this and the opposite page were made by G. M. Palmer of the company's engineering department.)

Consolidation under one roof of all its departmental work which the Appalachian's new large building provides, results in considerable savings in the costs of operation. Space is provided for the company's transportation department, where all of its garage work is done. Three ground floors to the rear of the building have been completely rearranged for this department, including storage space for company cars.

The Appalachian Electric Power Company has traveled a long way since it set up in Bluefield and inaugurated electric-power development of its territory. Its expansion, within a like period, has

(*Continued on page 74*)

APPLIANCE Service

Simple Defrosting Methods For Refrigeration Coils

By Allen Parker

EVERY service engineer knows the advantages to be gained in refrigeration by using a clean, ice-free coil. Yet it is sometimes hard to convince the user that ice on a cooling coil is actually an insulator and prevents the coil from operating at its maximum efficiency, since the heat conducting quality of ice and frost is not nearly so good as the coil surface and the capacity and efficiency of the coil rapidly drops off as the frost accumulates.

One of the most effective methods in the past for overcoming coil icing was to install a coil with as much surface as was practical, so that the temperature of the coil would not necessarily have to be so much lower than the maintained temperature of the refrigerated fixture. Consequently, on some jobs with ample coil capacity installed, and not so low a temperature to be maintained, it was possible to operate without the coil frosting. While on others, even if the coil did frost, and if the temperature of the refrigerated fixture was not below freezing, it was possible to operate the coil on a defrosting cycle.

In the latter case, the frost would accumulate during the running cycle of the machine when the temperature of the coil was below freezing, but on the off cycle the temperature of the coil would rise enough to melt the ice completely off before the machine started again. This would leave the coil clean and damp, which is ideal for efficient operation.

As might be expected, the use of ample coil capacity for an application was advocated by most installation and service engineers. But unfortunately, they were to learn later that there was such a thing as "over coiling" a fixture. This could be accounted for with several reasons, the main one being that the majority of all perishable products required a certain amount of dehumidification, otherwise meats would get slick and slimy and soon spoil. The lack of dehumidification would result from too large a coil operating at too high a temperature to remove very much moisture from the surrounding air and refrigerated products.

This discussion thus brings us back almost where we started, still needing a good method of defrosting many of our jobs that cannot be corrected by properly coiling. And this is still more essential now when we realize that many low temperature jobs are being sold, such as the new freezer lockers, freezer display cases, and ice cream hardening rooms, as well as many others. Since these fixtures are operating anywhere from ten degrees above zero to ten degrees below zero, maintaining a constant temperature makes it impossible to defrost them except through some special provision that has been made to accomplish it.

Cold storage plants have operated under such conditions for years although most of the plants used large ammonia equipment and bare iron coils for this type of cooling. Since these coils are not easily damaged, it is not uncommon for them to be cleaned by scraping off the frost. Even though coils of this type are most frequently thought of as the ammonia type, there is no reason why they could not be used for low pressure refrigerants such as freon and methyl. Naturally, the initial cost will be higher because it will take larger coils to secure the same amount of surface as the finned coils. Also, finned coils can be obtained to do the same job, but the fins are spaced much further apart than the regular finned coil and a skilled workman

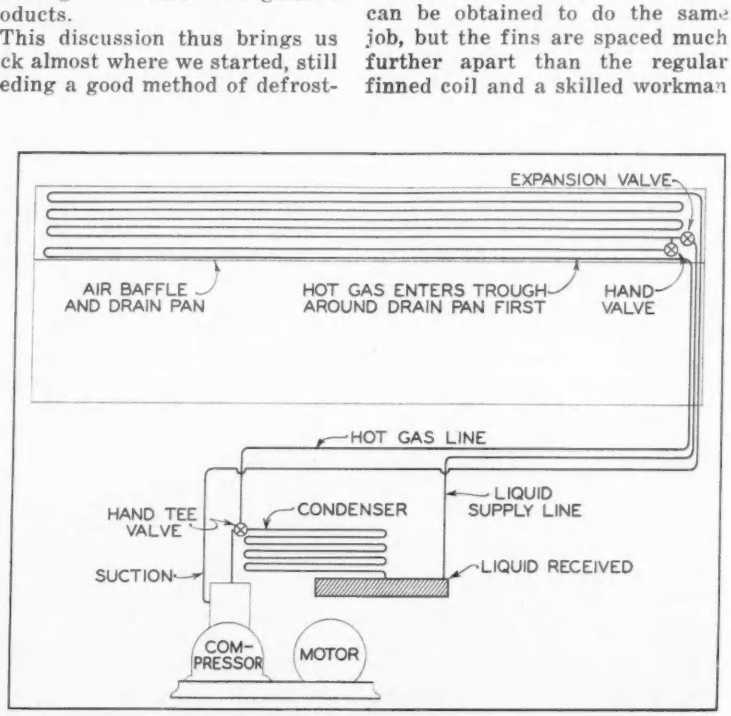


Fig. 1. One manufacturer accomplishes rapid defrosting by utilizing the hot gases from the condenser. Note the hand valve just ahead of the condenser and the special line extending through the drain pan and connecting to the cooling coil beyond the expansion valve. To operate, the two hand valves shown are opened for a few minutes.

would be required to scrape off the frost. Personally, I don't think so much of the scraping method if it can be avoided because of both the labor involved and the chance of damaging the coil.

One Manufacturer's Method

The manufacturers have realized the difficulties in defrosting low temperature coils, and here are some methods they recommend: One manufacturer is building display cases and fixtures with a quick defrosting attachment for this purpose, using the hot gas from the condenser to accomplish the defrosting. See Fig. 1. This method makes use of a tee valve in the compressor discharge line to the condenser with the tee line running to the inlet of the cooling coil just beyond the thermostatic expansion valve. The tee valve under normal operating conditions is closed but when quick defrosting is desired, it is opened. This bypasses the hot gas from the compressor direct to the cooling coil which should defrost it in a few minutes. The defrosting could possibly be accelerated when starting the defrosting by closing the liquid supply line and pumping the coil dry of gas, then closing the suction service valve or a valve in the suction line. This would assure that the hot gas under pressure reaches all parts of the coil.

On some display cases the hot gas line is also run in the drain trough of the baffle thus melting any ice which may be in it and thereby avoiding any overflow with the rapid defrosting. This type of defrosting has some disadvantages such as the refrigerant condensing into a liquid in the defrosting coil and returning to the crankcase of the compressor as a liquid in which event there is a likelihood of the compressor "slugging" liquid refrigerant and oil with the danger of bursting the compressor discharge valves.

As a precautionary measure, I would always throttle the valve in the suction line and allow the gas to return slowly until the excess pressure has been relieved, before completely opening the valve. Also, I believe that this method is more satisfactory when it is used in a multiple hook up with two or more fixtures that can be isolated from the one being defrosted and supply the necessary hot gas to the one being defrosted or vice-versa. Also, I would use it only on coils being fed refrigerant from the bottom.

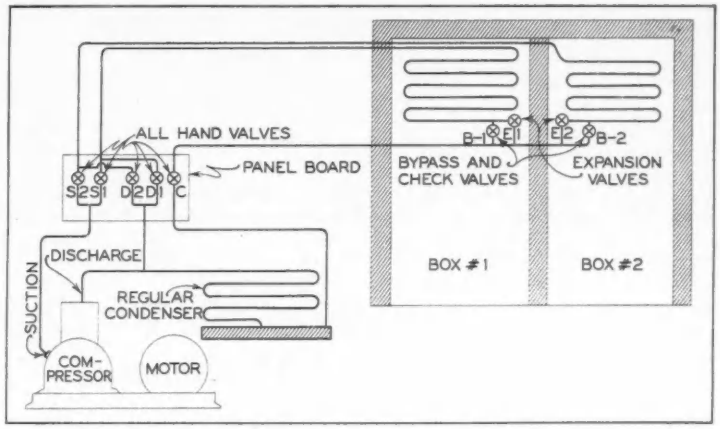


Fig. 2. This method of defrosting is only suitable for installations with two or more coils. The defrosting operation is accomplished by utilizing one coil as a condenser while the other coil is in normal operation. The method of operating is as follows: To defrost coil in Box No. 1, close valve C; open valve B-1; open valve D-1; close valve S-1; valve D-2 should be closed and valve S-2 open. With this arrangement, the discharge of the condenser first passes through coil No. 1, in which the refrigerant is condensed, then through the expansion valve and coil No. 2, and back to the compressor. To defrost coil No. 2: close valve B-1 and open valve B-2; close valve D-1 and open valve D-2; close valve S-2 and open valve S-1. For normal operation, of course, valves B-1, B-2, D-1, and D-2 are all closed and valves C, S-1 and S-2 are open. By installing check valves at B-1 and B-2 it is unnecessary to operate these valves by hand as the change in pressure will operate them automatically.

Another defrosting method that I like is a built-in feature on the forced draft coils built by some manufacturers. Included in the housing of the coil is the coil itself, a blower fan, and an electrical heating element. The housing has louvers on both sides. When the coil needs defrosting, it is only necessary to close the louvers on both sides, close the suction line valve, shut off the blower fan motor and turn on the electrical heating element switch. It will defrost in a very short time with no appreciable loss in refrigeration. To put the coil back into operation again, it is only necessary to reverse the procedure followed in defrosting. This is probably one of the simplest and easiest methods of defrosting and one with fewer disadvantages than the others.

In one or two refrigerated locker plants, I have observed a method for use in the quick freeze room which is simplicity itself but which requires a little more labor in its operation. In this system, the blower coil is enclosed in a compartment all its own with an individual door for both the intake and discharge air from the coil, and with regular tap water connected through a hose to the top of the coil. When defrosting is needed, it is only necessary to shut off the fan motor, close both intake and exhaust doors, and allow the tap water through the hose to run over the coil and out the drain. This appears to be a relatively fast and satisfactory method. Naturally, the incoming water hose and drain line from the coil should not have any traps in them, otherwise the lines will be plugged with frozen water when not in use.

Multi-coil System

Another method of defrosting that hasn't been so widely accepted yet, but one which should prove very satisfactory is the regenerative hot gas principle. In some respects it is similar to the hot gas defrosting, described above, other than in the fact that it can only operate on a job with two or more coils. (See Fig. 2). The by pass line from the discharge of the compressor is connected to each of the coils at a point beyond the thermostatic expansion valve, with a hand valve to control each coil individually. The system permits one coil to be used as a condenser while the other is being refrigerated.

The coil being used as a condenser can be made to supply the liquid to the other coil if a bypass from the bottom of the coil, beyond the expansion valve, is connected through a hand valve to the liquid line. This valve can be made to operate automatically, if desired,

(*Continued on page* 74)

MOTOR Service

Connecting Diagrams for Lap Wound A-c Motors

Part 9

By A. C. Roe

Railway Motor Engineer
Westinghouse Electric & Mfg. Co.

WITH this article we present the last of the six pole connecting diagrams, Figs, 25, 26 and 27. These are the two-phase, six-parallel, four leads; three-phase, six-parallel, three-lead star; and the three-phase, six-parallel, three-lead delta connections. In addition, we will also discuss the methods used in bringing out the starting and finishing leads of open slot insulated coils.

A check of these connecting diagrams will reveal that complete rings are used and that for the two-phase connections, shown in Fig. 25, there are four rings, each with six connections. Likewise, the three-phase star connection, Fig. 26, has four rings but one is a star ring with eighteen connections to it while each of the other three rings have only six connections. The three-phase delta connection, Fig. 27, has only three rings, with twelve connections to each ring. By checking small details of this nature one can store up an important fund of practical data that will come in handy when checking trouble, and in many other instances.

Most of the coils used for open slot stator windings, that are wound from round, square or rectangular wire, are completely insulated before installation in the core. Then, during the forming and insulating operations, the starting and finishing leads must be arranged to suit the type of stub and jumper connections used.

There are four main methods that are used to bring out the leads. In all cases, the leads of a-c stator coils are both brought out at the diamond point of the coil as shown in Figs. G and H. But with the leads at the diamond point, we still have the problem of arranging the leads to suit various conditions.

There are four general lead arrangements and they are: 1. Both leads straight out and starting lead free, that is, not fastened to end of coil. (See Fig. G). 2. Both leads straight out, but starting lead tied to nose of coil. (See Fig. H.) 3. Both leads bent down(or away from air gap) and starting lead free. (Discussed in next issue). 4. Both leads bent down, but starting lead fastened to nose of coil. (Discussed in next issue).

Before describing the four methods of lead arrangement it will be well to clarify a few terms used in making stator coils. Most stator coils are wound on a shuttle and pulled or spread to final shape on adjustable pulling or spreading machines. In winding the coils on a shuttle, the starting lead is always brought out from the center of the coil, or is on the top of the bottom coil half as shown in Figs. G and H. The finishing lead is then brought off from the top of the top coil half as in Figs. G and H.

In all stator windings, the section of the coil that lies nearest the air gap is called the top half of the coil, thus the slot section of the coil nearest the air gap is termed the top cell. As shown in Fig. G-a, this top cell is generally made longer than the bottom cell. Then, when pulling the stator coils into shape, the coils are pulled upside down. That is, the coils are handled like rotor coils except the leads are on the bottom and the long cell is on the bottom jaw in pulling. This will be explained in more detail in a later article.

For left hand coils, the leads are on the right when pulling. After pulling, the coils are turned over, which brings the finishing lead on top of the top coil half as in Figs. G and H. In pulling, the leads are on the bottom and this relation should be kept in mind when considering stator coil leads.

The finishing leads are brought off the top of the coils, there are no difficulties encountered as regards the shape and arrangement of the conductor or strands. However, the starting leads present quite a problem, depending upon the conductor and space between adjacent coils.

In Fig. G are shown details of the method of bringing the leads straight out and with the starting lead free, or "Straight Out Free Leads." The coil shown has a two strand conductor arranged one deep by two wide or "1 x 2." The top or finishing lead has the conductor brought out as it is wound, "1 x 2." However, because of restricted space, the starting or bottom lead has the strands arranged two deep by one wide. Thus the lead is only one strand wide plus insulation.

Fig. G-a shows how the leads are taped to the coil. The top lead is brought out where the bend in the coil end starts, while the starting lead is caught back of where the bend of the first turn ends. The starting lead is free from this point out.

●

THIS is the ninth article in a series that will present 45 modern connecting diagrams for two- and three-phase lap wound induction motors for use on four-, six-, and eight-pole windings.

A master table of the 45 diagrams was presented in the July 1939 issue together with the first three diagrams of the series. Three additional diagrams have appeared in each succeeding issue.

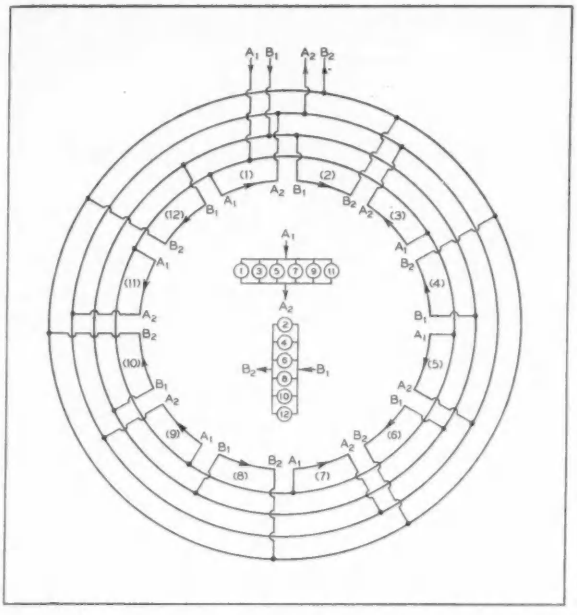


Fig. 25. Diagram for six-pole, two-phase, six-parallel connection with four leads.

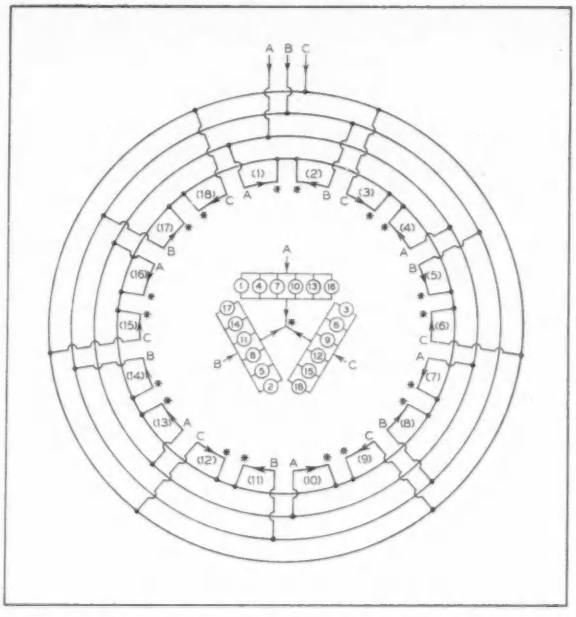


Fig. 26. Diagram for six-pole, three-phase, six-parallel star connection with three leads.

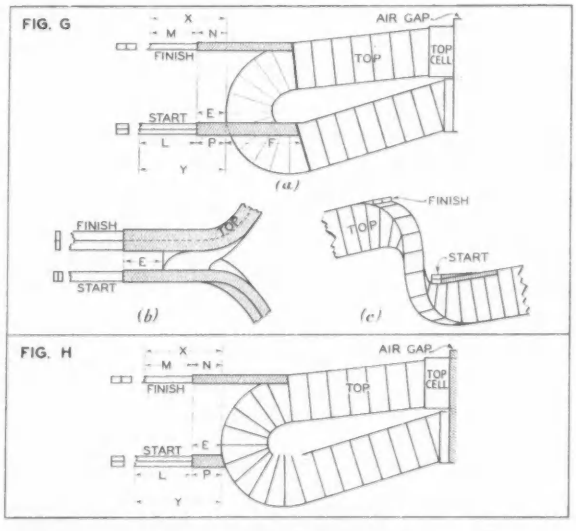


Fig. G. (Above) The manner of bringing out leads is important in pre-formed and insulated coils. One of four general methods is illustrated here: both leads straight out and starting lead free. Fig. H. (Below) Another method: both leads straight out, but starting lead fastened to nose of coil. (See text for further details.)

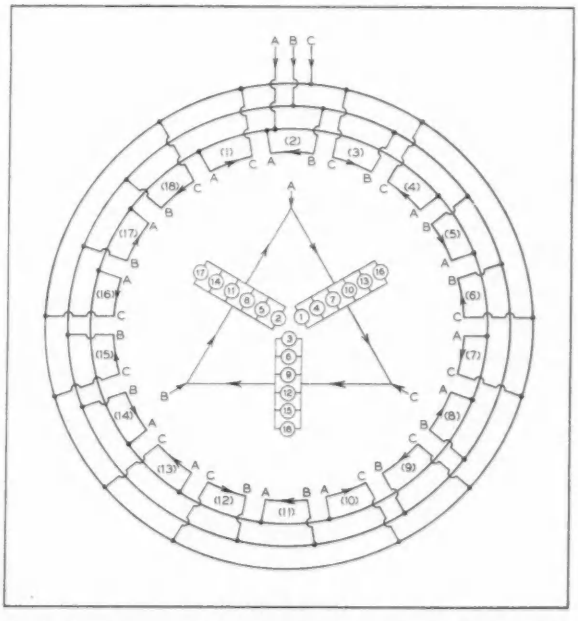


Fig. 27. Diagram for six-pole, three-phase, six-parallel delta connection with three leads.

The left hand section of Fig. G-a shows how the lead dimensions are taken and recorded. The additional letters are given to permit using long and short leads for pole phase group jumpers. For example, for an 8-pole, three-phase winding, there would be 24 groups of 4 coils each. With a series, top-to-top connection, we could use 24 coils with long top leads, 24 coils with long starting leads, and the remainder, or 48 coils, would have both leads the same length or about 4 inches long. The lead data would then be as follows, where X and Y indicate the total length of the lead from the nose of the coil as shown. Then M and L indicate the outer ends of the leads that have all insulation removed down to the bare wire and are tinned or cleaned bright for brazed joints. The dimensions N and P indicate the point to which the lead insula-

No. Coils	X	M	N	Y	L	P	E
24	12	4	8	4	3	1	—
24	4	3	1	12	4	8	—
48	4	3	—	4	3	—	1

(Continued on page 57)

ENGINEERING SECTION

Rubber Protective Equipment Used Safely on 13.2 Kv

By Martin J. Urner

Asst. to Operating Vice Pres.
The Potomac Edison Company
Hagerstown, Md.

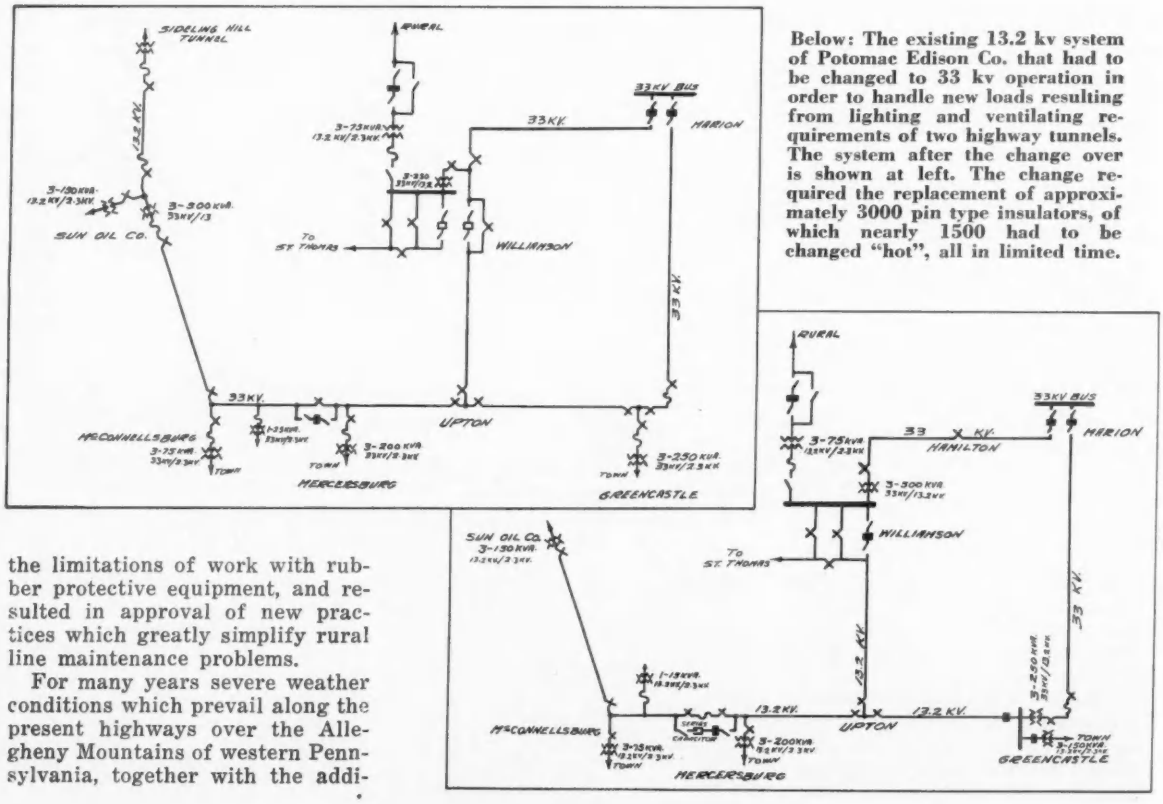
ONE of those rush jobs which are frequently dropped in the laps of utility construction men developed for the Potomac Edison System when contracts were signed for supplying electric service for both construction and future operation of two of the seven tunnels of the new Pennsylvania All-Weather Highway from Harrisburg to Pittsburgh—the greatest single highway project in United States history.

A complete changeover from 13.2 kv to 33 kv of a distribution system supplying four small towns was necessary to serve the new load. To expedite this work a technique was developed for live-line work on 13.2 kv circuits which changed previous conceptions of the limitations of work with rubber protective equipment, and resulted in approval of new practices which greatly simplify rural line maintenance problems.

For many years severe weather conditions which prevail along the present highways over the Allegheny Mountains of western Pennsylvania, together with the additional hazards of steep grades, winding curves, and increasingly heavy traffic, have prompted a search for a more favorable route. With the right-of-way of an old railway project determining the general course, the new $70,000,000 highway will drive through, rather than over, the higher ridges, with a grade less than one third that of present routes.

Partially driven tunnels abandoned in 1883 are being enlarged and completed and elaborate lighting and ventilating systems are being installed. The larger of the two tunnels supplied by Potomac Edison will be 6,600 feet long and when in regular operation will have a normal lighting load of 100 kw and a power load of 75 kw. Emergency demands for ventilation may push the power load to 1200 kw. To protect service to the tunnels and to assure a supply for emergency demands, the Turnpike Commission will have a 13.2 kv line paralleling the highway which will be arranged so that power from a number of utility systems can be dispatched where needed. Electric power is also being extensively used in the tunnel construction work, some 2,500 horse power having been installed at the two tunnels.

By arrangement with the Re-



Below: The existing 13.2 kv system of Potomac Edison Co. that had to be changed to 33 kv operation in order to handle new loads resulting from lighting and ventilating requirements of two highway tunnels. The system after the change over is shown at left. The change required the replacement of approximately 3000 pin type insulators, of which nearly 1500 had to be changed "hot", all in limited time.

public Service Management Corporation, operators of the system supplying this area, Potomac Edison several years ago built a 13.2 kv line west from the Republic property to provide service for a 300 hp gasoline pipeline pumping station. Although the end of this line was within a short distance of the first tunnel portal, to provide the amount of power needed it was necessary to change over nearly all of the 13.2 kv system to 33 kv in addition to building about 3.0 miles of new line.

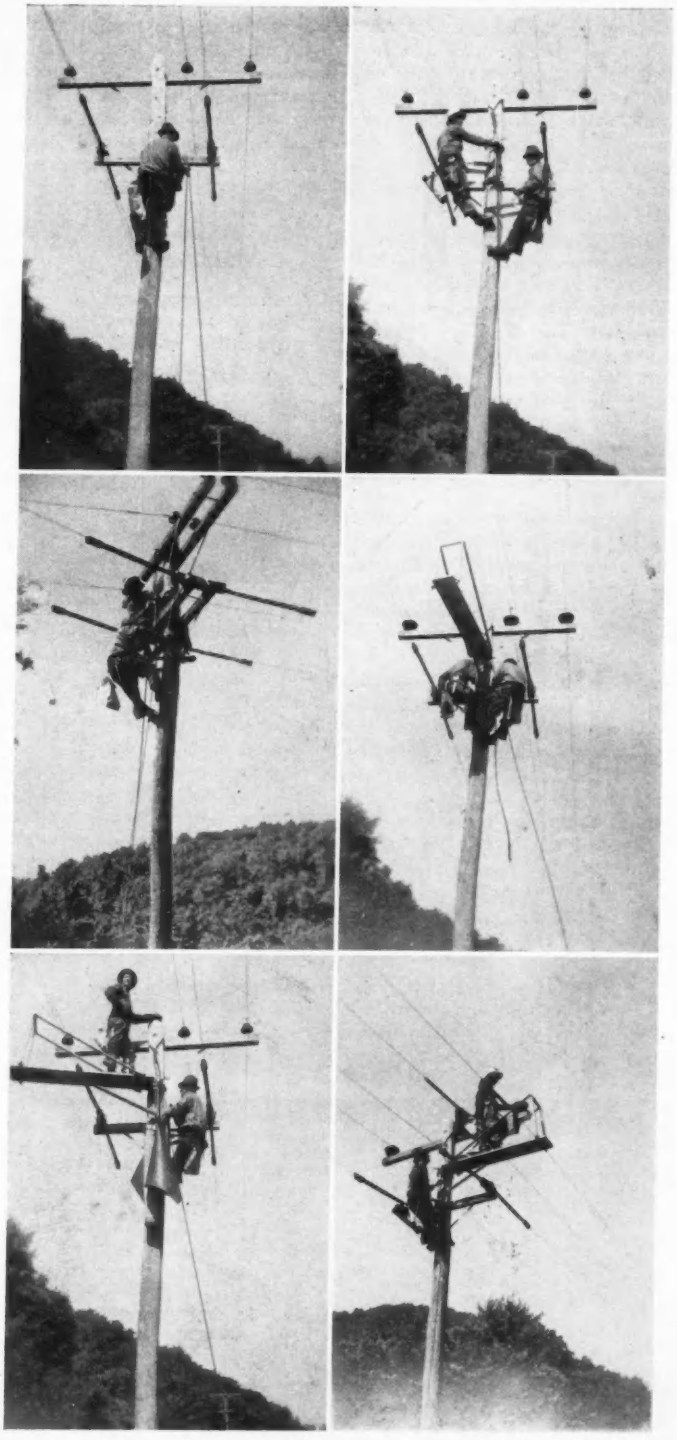
This changeover required the replacement of some 3,000 pin type insulators on thirty-five miles of line, and the reconstruction of six substations. The tunnel contractors were in a hurry to get started, of course, and they were assured that a supply up to 100 kva would be available in thirty days, and a full supply would be ready within another thirty days. The rush nature of the job and the extreme importance of minimizing interruptions to regular customers made necessary careful planning and coordination of the various phases of the work.

New Methods Developed

Changing insulators in the short time allotted, without interrupting service, presented the most difficult problem. Of the 35 miles of 13.2 kv line which had to be reinsulated, 10 miles are a part of a loop circuit which could be taken out of service a section at a time and worked dead. However, there were left some 1500 insulators which it was felt should be changed hot, and some method had to be developed which was both speedy and safe.

After considering the use of regular hot-line tools for changing pin type insulators that method was dropped because of slowness and cost. For a number of years Potomac Edison has approved working on live lines of voltages up to 6900 volt delta using 20,000 volt rubber gloves and rubber protective equipment. Since experience with this practice has been very satisfactory, it was finally decided that if the linemen could work from some kind of insulated pole platform which could be quickly installed and removed, the job could be done safely, as well as speedily, with the same type of equipment.

A pivot type pole platform with collapsible platform railing made by Tips Tool Company, which has wood members of the kind ordinarily used for hot-line tools, was



These photos show successive steps in Potomac Edison's method of changing 13 kv pin type insulators, making use of 20,000-volt rubber gloves and other rubber protective equipment. The hot conductor to be untied was covered with rubber hose leaving only the insulator exposed. After tie wire was removed, the hot conductor was laid on the cross-arm with rubber hose moved forward to eliminate direct contact with crossarm. Photo sequence shows: (1) covering lower wires, (2) getting ready for platform, (3) mounting bracket for platform, (4) installing platform, (5) ready to cover 13 kv conductors, and (6) installing last 33 kv insulator. Insulated platform is essential to this method.

selected, and a picked crew of seven men was given special training for the job. Each man was assigned definite duties and before hot work was attempted, the various operations were practiced until each man knew his part thoroughly.

Some of the steps in the insulator changing procedure are shown in the accompanying photographs. First step was the covering of all live 2300 volt conductors with rubber line hose and insulator hoods. Then the pole platform was hoisted into place and secured. Working from the pole platform, which was swung into proper position, the linemen protected his working space with line hose and rubber blankets.

The hot conductor to be untied was also covered with line hose, leaving only the insulator exposed. When the tie wire was removed, the hot conductor was laid on the crossarm with the line hose moved forward to prevent contact between the conductor and the crossarm. After the old insulator was removed and the new one was installed, the procedure described was reversed. During the whole procedure operations were so coordinated that only materials actually needed at the moment were at hand for the man at the pole top. This added to the safety of the work, and was easily accomplished by use of an endless handline run through a block.

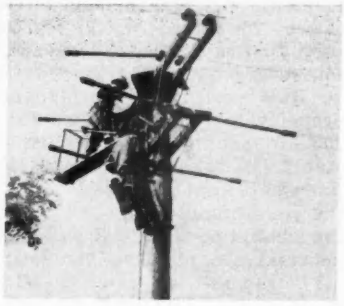
After several day's experience, the crew was asked to state whether they preferred to continue the new method or to complete the job with the hot line tools with which they were familiar. The crew was unanimously in favor of the new method, and in a total of twelve working days changed 1500 insulators, at a rate of about two changes per man hour.

Ideal Weather Not Essential

At first it was planned to work only under ideal conditions of dry poles and clear weather, but later on work was done at any time except when rain was falling. Since then, this method has been regularly used in one district for general live line work on 12.0 kv grounded neutral rural lines, and it has proved to be convenient, safe and economical.

In addition to the 1500 insulators that could be changed hot, there still remained many other line and insulator changes that could only be made with service interrupted. Shortly after midnight one Sunday morning, linemen with trucks took up positions along the line, each with definite jobs to do. At 2 A.M. the lines were killed, and when service was restored at 6 A.M. there had been replaced some 700 pin type insulators at corners and congested locations, 200 pins, and a number of dead-ends and two air break switches. Some minor details were left for the time of final changeover.

While changing the pin type insulators was the most dramatic phase of the whole job, new

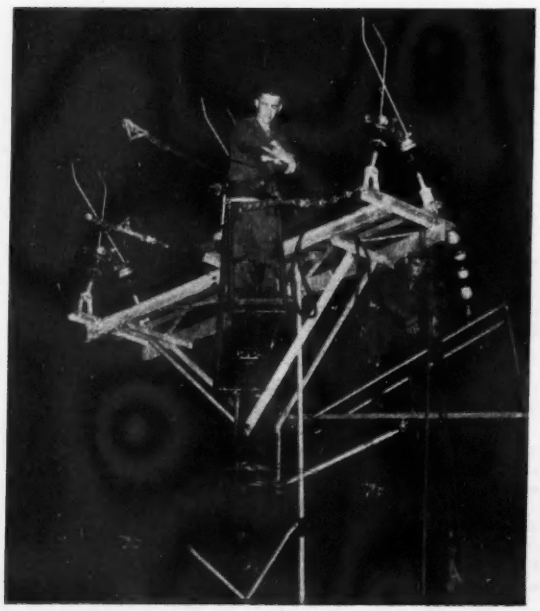


line construction and substation changes in progress at the same time required careful engineering and organization. Construction of 3 miles of new line to the first tunnel portal and, in addition, building to Turnpike Commission Specifications another 1½ miles of line over the mountains to the other portal, required concentration of effort by engineers and line crews. One company line crew with a force of some 40 temporary workers recruited locally, ran these lines through rugged and heavily wooded country in a very short time and limited service was available within the 30 day time limit.

Six Substations Changed

At the six substations it was necessary to have everything in readiness so that the entire changeover could be completed during one service interruption. This meant that as much work as possible had to be done beforehand. With two power sources available at Greencastle it was possible to install a new bank of three 250 kva transformers and to remove the two old banks without an interruption.

One of the banks removed was suitable for supplying 13.2 kv service at Williamson, so the transformers were hauled to that point and placed in position beside the three 500 kva transformers which it was planned to transfer to the Sun Oil Substation. At Mercersburg three 200 kva transformers were installed temporarily alongside the old substation, with connections arranged so that a quick switch-over could be made. At McConnellsburg a complete new substation was built beside the old one. At the Sun Oil Substation the equipment was rearranged so that the three 500 kva transformers from Williamson could be quickly hooked up to supply 13.2 kv service for the line to the tunnels. In addition, ten 33 kv air



In addition to the insulator changes required, considerable other line work was necessary. As much of this work as possible was done in advance of the actual cutover, and during periods when service could be interrupted. A number of dead-ends, some 200 pins, and 700 insulators at corners and congested locations, as well as two air break switches, were included in this work. This photo shows advantageous use of two pole platforms while installing a new 33 kv air break switch. Small photo, upper right, gives another view of crew making insulator changes on hot line.

Electrical
MERCHANDISE
by
KNOX
KNOBS
TUBES
CLEATS
SPECIAL
PORCELAIN
HOUSE
BRACKETS
WIRE
HOLDERS
ETC., ETC.
THERE'S NO SUBSTITUTE FOR QUALITY
.... and with the KNOX LINE you get quality .... plus service ... plus satisfaction and the advantage of buying more items on one order than from any other manufacturer.
We illustrate here a few of the more than 600 items shown in our 72 page catalog. A copy is yours for the asking.
Sold through jobbers everywhere.
KNOX PORCELAIN CORPORATION
KNOXVILLE, TENN.
The Complete LINE

break switches and two 33 kv oil circuit breakers were installed, some of which awaited final connection until the last big night.

When all possible preliminary work had been finished, arrangements were made for de-energizing the 13.2 kv lines from 3 A.M. to 7 A.M. on a Sunday morning, and for interrupting service to the Sun Oil Company and the tunnels until noon. Plans were also made to carry Mercersburg service during the light load period over a 2300 volt line from Greencastle, and to supply the McConnellsburg load by nursing into operation an old and seldom used oil engine plant.

Detailed written instructions were prepared to cover work during the last night, carefully scheduling the various operations and outlining the duties of the line and substation crews. At 2 A.M., 57 men with 17 trucks and cars took their appointed stations and began getting tools and equipment ready. At 3 A.M. clearance was given on the line from Marion and work begun.

The night's heaviest work fell to the substation gang at Williamson. Their job was to remove three 500 kva transformers weighing nearly 13 tons and to slide into position and connect up three 250's. The three 500's then were loaded on a special 16-wheel trailer, and by special arrangement with the State Highway Commission, they were hauled some 35 miles over the mountains to be unloaded and installed at the Sun Oil Substation. Two trucks, double-headed, were necessary to negotiate the heavy grades.

To the line crews fell the work of completing the last of the insulator and pole changes at widely separated points, and reconnecting the substations at McConnellsburg, Cove Mountain, and Mercersburg. This work was finished and normal service was restored to these points at 7:15 A.M. Service to the Sun Oil Substation was restored shortly after noon.

The entire project was completed without a single lost time accident and without a serious mishap of any other kind, proving that even the most difficult rush jobs can be handled safely if proper precaution and adequate supervision are provided.

Brief Reviews of New Equipment and Apparatus

Rats, Breakers And Service!

Short-circuiting of light and power lines by rats coming in contact with cables attached to oil circuit breakers in the power house of a large electric utility company caused officials no end of annoyance to say nothing of the inconvenience to consumer, until a method of surmounting the difficulty was hit upon. Various ideas were submitted, but it was not until engineers of the Mechanical Goods Division, United States Rubber Co. devised a rubber "boot" that the rat menace was overcome. These molded rubber cable boots, shown in the above photograph, fit over the insulator and up on the cable, covering the latter to a point beyond the reach of even the largest rat.

Meter Photo Tester Fast and Accurate

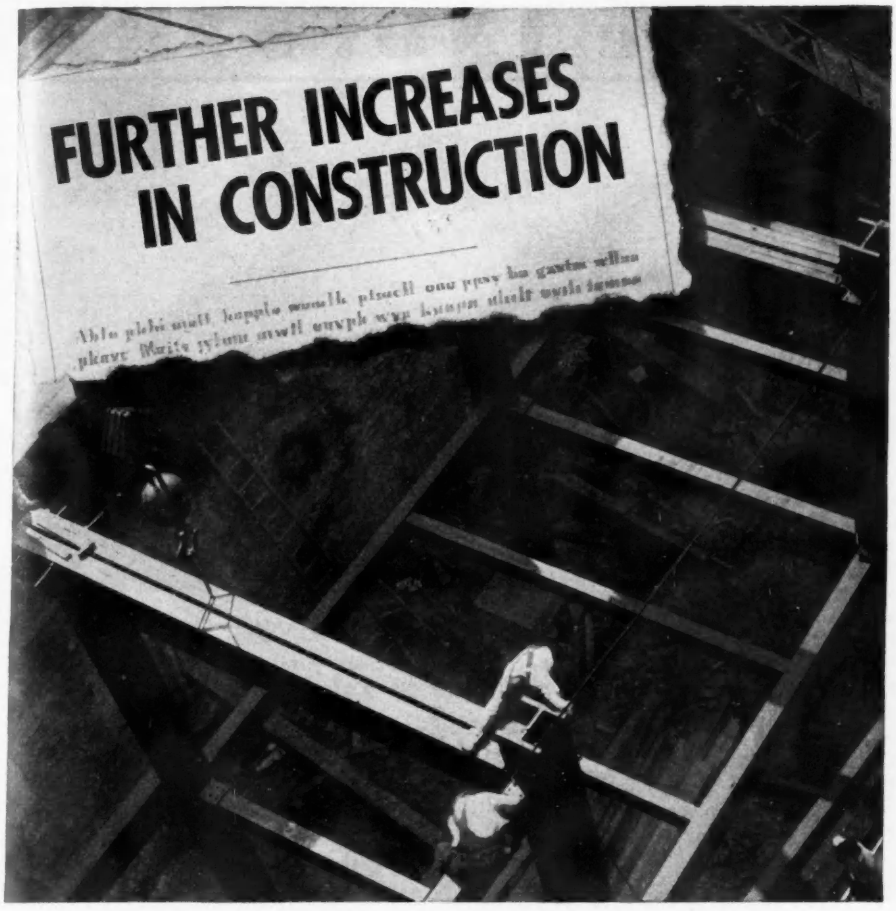
For reducing the cost and improving the accuracy of testing watthour meters, General Electric has announced a new photo tester. Utilities will find this new instrument advantageous in their testing work as it is possible to calibrate many more watthour meters by this method than it is by hand.

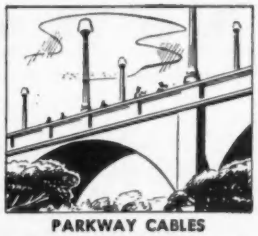
The new photo tester is an automatic device employing a light beam photo-tube and relays which are used to count the revolutions of a meter under test and to start and stop the rotating standard in accordance with the revolutions.

In testing a watthour meter, a concentrated beam of light is focused on the meter disk. Twice each revolution the light shines through the creep holes in the disk on the photo-tube. An amplifier relay unit in the control box opens and closes the potential circuit of the rotating standard in accordance with the predetermined revolutions of the meter which are set by the

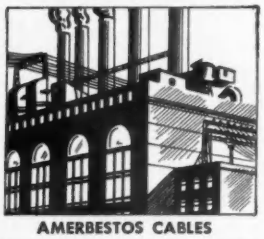
(*Continued on page* 74)

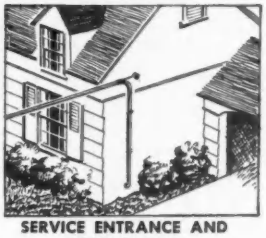
New meter testing device utilizing light beam and photo tube.

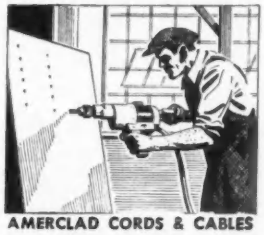


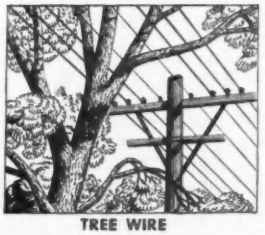

PARKWAY CABLES

VARNISHED CAMBRIC CABLES


AMERBESTOS CABLES


SERVICE ENTRANCE AND DROP CABLES


AMERCLAD CORDS & CABLES


TREE WIRE

. . . and More Satisfied Users of AMARINE-30

AMARINE-30 building wires and cables with braided coverings are approved by Underwriters' Laboratories for installation underground; in concrete slabs or other masonry in direct contact with earth; in permanently moist locations; and where the condensation and accumulation of moisture within the raceway are likely to occur. Ordinarily, installations of these types would call for the use of lead-sheathed cables. Wherever such conditions exist AMARINE-30 can be employed safely and at worthwhile savings.

Other outstanding building wires of the highest quality are:

Americore (Code)
Amerite (30% Performance)
Amperox (Heat-Resistant)

All of these products are manufactured by the American Steel & Wire Company and are made under rigid supervision. Superior quality and satisfactory service have made them the choice of the building industry. Write for data.

ADEQUATE WIRING SERVES AND SAVES

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*

United States Steel Export Company, New York

UNITED STATES STEEL

NEWS of the INDUSTRY

"It's Still a Thrill To Modernize!"

This terse six-word message will be carried to electric range prospects everywhere by the Modern Kitchen Bureau's 1940 range promotion program.

Particularly effective is the window display material that is being made available to dealers and utilities to tell the story of kitchen modernization and the speed, cleanliness and genuine economy of electric cooking.

Shown here is a window banner which emphasizes the Bureau's 1940 theme. The display material is only one unit in the compact, comprehensive "Electric Range Revue" campaign. According to H. L. Martin, bureau manager, everything that goes into the making of a successful promotion is being provided. Plan books, with sales making suggestions, are being placed in the hands of utilities and dealers. The modernization theme will be pounded hard—with folders, window displays, newspaper advertising.

National advertising, so essential to the success of such a campaign, will be used to best advantage. Full-pages in color and half-pages will run throughout the year in *McCall's Magazine*, *Better Homes & Gardens* and *Saturday Evening Post*. The combined circulation of these three magazines total over 8 million—a huge group of women who have as one of their major interests homemaking and cooking.

IT'S STILL A THRILL TO MODERNIZE!
FAST AS FIRE.... WITHOUT THE FLAME!
CLEAN AND CHEAP LIKE ELECTRIC LIGHT!
1890 ELECTRIC LIGHT
1940 ELECTRIC COOKING
COME IN AND SEE OUR 1940
ELECTRIC RANGE REVUE

This is the first sample of the Modern Kitchen Bureau's electric range window display material that will go to work for dealers and utilities this spring, telling the story of kitchen modernization; selling the speed, cleanliness and genuine economy of 1940 electric cooking.

Knoxville Dealers' Bureau Selects Officers for 1940

T. W. Justice of Sterchi's is again president of the Major Appliance Bureau in Knoxville, Tenn., an association of electric appliance dealers, which has attracted national interest.

Paul Davis, of Fowler Bros., Herbert Johnson, of Woodruff's, Lester Maxwell, of Maxwell Furniture Co., R. A. Jarnagin, of George's, Zeno Brown, of Electric Home Servants, and Clyde Carpenter, of the Electric Power Board, were elected vice-presidents for 1940. Ernest Aurin of the Power Board was re-elected secretary.

The Bureau has adopted a "Code of Ethics" that has attracted much attention. One of the provisions requires that, "A department has been set up to handle appraisals of old electric ranges and refrigerators. The first dealer to contact a customer will appraise the appliance and call in his bid. If this customer is contacted by another dealer he must call to see if this appliance has been appraised. If so, he will not exceed the first appraisal." All dealers are required to submit to the secretary their cash installed prices on merchandise, which prices are interchanged between other dealers, and no cash discounts are allowed from the prices.

This window display of the Ohio Power Company won first prize in the Modern Kitchen Bureau's national contest for electric water heater window displays. The use of real running water and live steam in the shower booth was a feature of this window.

Water Heater Display Contest Developed Interesting Windows

Many unusual window display designs featuring electrical water heaters were entered in The Modern Kitchen Bureau's 1939 window display contest, according to H. L. Martin, bureau manager.

The first prize of $100 was awarded to H. F. Strong and Ernest Vogt of the Ohio Power Company.

Second prize was awarded for a display constructed by Andy Hess, Kansas Power & Light Company. Among the ten other prize winning displays were those entered by Tampa Electric Company, Florida, and Gulf States Utilities Company, Beaumont, Texas.

EHFA Will Open Two New Offices in South

The Electric Home and Farm Authority is planning to open two new district offices in the Southern states as a result of an increase in business in that territory during the past year, Charles A. Suppler, assistant general manager, told a sub-committee of the House recently during a hearing on the Independent Offices Appropriation Bill for 1941.

A disbursing office may be opened in Austin, Texas, because business is increasing rapidly in Texas at this time, Mr. Suppler declared. The Authority is as yet undecided whether to locate this

GRAYBAR customers in each of these fields get extra benefits from the fact that the specialized service they receive is part of a well-rounded whole... centered on the problem of supplying "everything electrical"... banded together in encouraging greater utilization of electrical ways of doing things. » » » Utilities gain when dealers are aided in offering better lighting, better electrical appliances... contractors gain when the promotion of more electrical equipment creates need for adequate wiring in construction or modernization... dealers gain when power lines are more trustworthy, and contractors more fully informed on modern wiring supplies. And the gains for all three are maximized by GRAYBAR'S insistence that the products it distributes meet quality standards making for sound performance and satisfactory service to all concerned.

To get your share of the "plus values" of this well-rounded service... get in touch with your local GRAYBAR branch today.

Among the 60,000 items
Distributed by
GRAYBAR

FOR THE UTILITY—Poles and pole line hardware, wire, cable, insulators, tools... "everything electrical" a power and light company needs.

FOR THE CONTRACTOR—Lighting fixtures for offices, stores, homes, ventilating equipment, all types of wire and wiring supplies.

FOR THE DEALER—Table appliances of all types, mixers, irons, electric shavers, G-E Mazda lamps.

OFFICES IN 82 PRINCIPAL CITIES • EXECUTIVE OFFICES: GRAYBAR BUILDING, NEW YORK, N. Y.

office at Austin or in Portland, Ore. There are four of these offices in operation, in Chattanooga, Washington, Los Angeles, and Chicago.

The second office suggested for the South will be located in Washington, D. C. This will be a purchase office for handling paper resulting from increased business in Virginia, and the Carolinas. The Authority, Mr. Suppler said, has recently negotiated a contract with a utility in Virginia that will cover about one-third of the state.

Florida Contractors To Meet in April

Problems of the electrical industry will receive thorough discussion at the annual meeting of the Florida Association of Electrical Contractors and Dealers to be held in the San Juan Hotel, Orlando, Florida, April 1 and 2, according to announcement by F. J. McGinnis, secretary.

A wide range of topics of interest to the electrical industry of the state will be covered in the meeting program which will include as speakers representatives of the Edison Electric Institute, National Electrical Manufacturers' Association, National Electrical Wholesalers' Association, National Electrical Contractors' Association, International Association of Electrical Inspectors, and the International Brotherhood of Electrical Workers.

A meeting of the Association's executive committee will be held Sunday, March 31, just preceding the general meeting on April 1 and 2.

Although past annual meetings of the Association have been unusually well attended, it is expected that even greater interest will be indicated in the forthcoming meeting as a result of the activities of J. H. Dyer, field representative of the National Electrical Contractors' Association, who will make a tour of the state of Florida prior to the annual meeting.

Jacksonville Contractors Make Plans for National Meeting

A most enjoyable banquet was given recently by the Electrical Contractors' Association of Jacksonville, Florida, in the Silver Ball Room of the Seminole Hotel. At this time, plans were discussed for the National Electrical Contractors' Convention which is to be held in Jacksonville, in the latter part of October.

W. O. Henderson presided at the meeting following the dinner, and introduced the guest speakers: Guy Simmons, city commissioner; Harold Whitehead, president of the City Council; Frank Gardner, city utility executive, and Walter Stall, chief electrical inspector.

Complete co-operation was pledged by all present, and the association is anticipating a record attendance at the national convention.

Principal speaker at the sixth annual dinner of the Electric Institute of Washington, D. C., was Dr. Wm. McClellan, president of Union Electric Co., Mo., and former president of Potomac Electric Power Company. Left to right, M. C. Turpin, Westinghouse, past president of the Institute; Ward Stringham, General Electric Supply, newly installed president of the Institute; Dr. McClellan; Leland Olds, chairman, Federal Power Commission; and Riley E. Elgen, public utilities commissioner, Wash, D. C.

Electric Institute of Wash. Observes 6th Anniversary

Power rate reduction can come only through the increased sale of appliances, Dr. William McClellan, president of the Union Electric Co., of Missouri, told 300 members of the Electric Institute of Washington recently at the sixth annual dinner meeting of the association.

The cost of constructing distribution systems is so high, said Dr. McClellan, that "rates cannot be reduced as long as the average householder has only a few lamps attached to the end of an expensive outlet."

In urging appliance dealers to consider this approach to lower rates, Dr. McClellan declared that the profits of the power companies will not increase. "We may put a few more million dollars to work." he said, "but as you know we will only receive a fair and reasonable return upon it. We are necessarily and rightly limited."

The annual report of the Institute, submitted by J. S. Bartlett, managing director, revealed that the estimated dollar volume of appliance sales, both major and small, for 1939 in the territory served by the Potomac Electric Power Co. was approximately 9¼ million dollars, an increase of 21 per cent over the previous year. Sales of three types of appliances ran over a million dollars each in retail value. They were: radios, $3,435,120; refrigerators, $2,490,540; and oil burners, $1,130,000.

Sales increases reported for major appliances in 1939 over the previous year were: ranges, 11.7%; refrigerators, 1.9%; oil burners, 33.5%; radios, 38.2%; vacuum cleaners, 2.6%; and water heaters, 56.8%. Ironer and washer sales were lower: ironers, 1.03%, and washers, 2.5%. To overcome this loss, the first campaign of 1940 will be on laundry equipment.

Mr. Bartlett revealed that the Institute spent over $110,000 for appliance promotion in 1939.

Ward Stringham, of General Electric Supply Corp., was installed as president of the Institute for 1940. Other new officers are: P. H. Erisman, of Washington Refrigeration Co., vice president; John F. Myers, of Westinghouse Electric Supply Co., treasurer; F. C. Schneider, of C. Schneider's Sons Co., secretary; and J. S. Bartlett, managing director.

Lighting Engineers Hear Comprehensive Program

The winter meeting of Southwestern Section, Illuminating Engineering Society, was held in Houston, Texas, February 2 and 3. The three sessions drew a total attendance of nearly 150 persons, to hear several interesting papers, to witness some very informative slides, and to take part in discussions on modern illumination.

Guy G. Griffin, of Dallas, chair-

FLUORESCENT "COMES EASY"

TO CONTRACTORS WHO KNOW THEIR

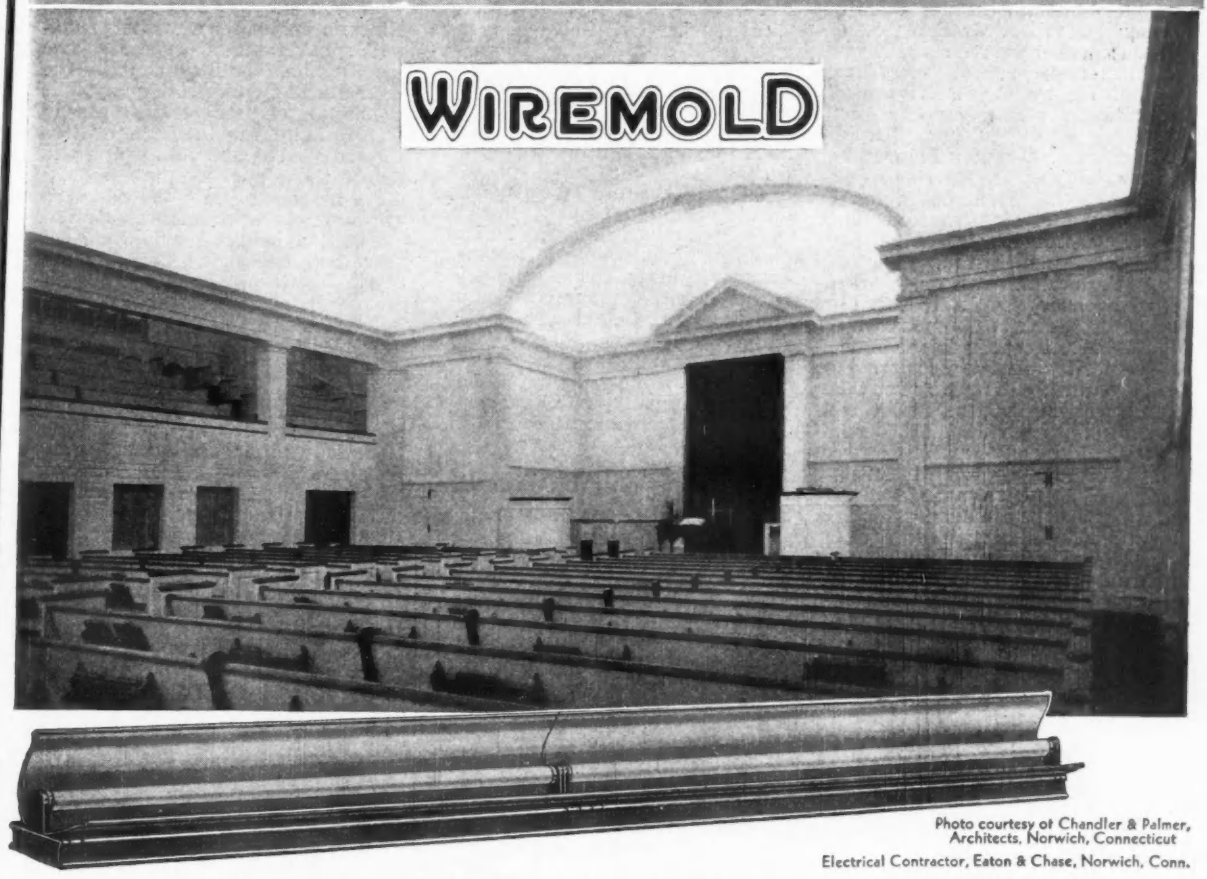


Photo courtesy of Chandler & Palmer, Architects, Norwich, Connecticut

Electrical Contractor, Eaton & Chase, Norwich, Conn.

From the unretouched photograph reproduced above you can see what a beautiful job this contractor did with Wiremold Fluorescent Cove Lighting in a Norwich, Connecticut, church.

See how evenly the light is distributed over the ceiling surfaces. Notice, too, the even intensity of light throughout the entire body of the church. What cannot be shown or adequately described is the unique *quality* of the fluorescent lighting which has demonstrated definite advantages for church illumination.

Jobs like this are typical of the worthwhile fluorescent lighting opportunities that contractors in every territory are handling more easily, more profitably and with greater satisfaction through the use of simple, flexible, correctly engineered Wiremold Fluorescent Lighting Equipment.

No. 3000
WIREMOLD
Fleur-o-lier
FLUORESCENT LIGHTING EQUIPMENT

Use Wiremold FLEUR-O-LIER Fluorescent Lighting Equipment for CONTINUOUS STRIP or MULTIPLE STRIP Lighting, SINGLE or MULTIPLE Units, SHOW CASE and WALL CASE, COVE and special installations.

DON'T FORGET . . . WIREMOLD ENGINEERING SERVICE is always available to help you with your "tough" problems . . . to help you make sure that every Fluorescent job you install is a source of customer satisfaction.

THE WIREMOLD COMPANY, HARTFORD, CONNECTICUT

Your Business Builder

ADEQUATE WIRING SERVES AND SAVES

WIREMOLD

LIGHTING and WIRING EQUIPMENT

LISTED BY UNDERWRITERS' LABORATORIES, INC.

man of the section, presided at the opening session Friday afternoon and the second session held in the evening. W. E. Folsom, also of Dallas, presided at the Saturday morning session.

Papers presented Friday afternoon included: "Outstanding Lighting Installations in Houston," by Harry H. Hrivnatz; "Effect of School Lighting Code in Texas," by V. J. Graham; "Adequate Commercial Wiring," by P. M. Rutherford; report of Research Committee, by F. Y. Brightman; "Lighting for Safety and Protection," by H. B. Sudekum; "Application of 100-Watt Fluorescent Lamps," by W. H. Harrison (this paper read by F. A. Covington in the absence of Mr. Harrison); and "New Technic in Store Lighting," by A. P. Hammerstrom.

At the evening session the principal speaker was J. M. Ketch, of General Electric Company, Nela Park. Mr. Ketch was introduced by W. J. Aicklen, Jr., vice president of Houston Lighting & Power Company, who also delivered the welcoming address to the I.E.S. members in Houston. Mr. Ketch spoke on "The Industrial Lighting Code."

Three speakers addressed the group Saturday morning: W. F. Jenkins, who discussed "Trends and New Developments in Residential Lighting"; J. W. Dehnert, "An Architect Views Residential Lighting"; and Dan Painter, whose topic was "Adequate Wiring for Light Conditioning."

Oklahoma Utilities to Hold Annual Meeting

Executives and employees of electric and gas utility companies from all parts of Oklahoma, and some delegates from surrounding states, are expected to be in attendance at the two-day convention of the Oklahoma Utilities Association, to be held at the Biltmore Hotel, Oklahoma City, March 18 and 19. Registration of between 350 and 400 persons is expected, according to Miss Kate Niblack, secretary.

The convention will open Monday with registrations and meetings of the electric and gas divisions of the associations to choose division chairmen. The general program will start in the afternoon with the address of Frank B. Long, vice president, Oklahoma Natural Gas Co., Tulsa, Okla., president of the association.

Convention meetings also will include an executive board luncheon Monday noon at the Biltmore Hotel, and the annual banquet and entertainment feature Monday night. Principal speaker at the banquet will be Dr. Howard Taylor, dean, Oklahoma College for Women, Chickasha, Okla.

Speakers on electrical and allied subjects will include: C. W. Kellogg, president, Edison Electric Institute, New York, N. Y.; Dave Vandiver, president, Oklahoma Press Association, Chickasha, Okla.; E. W. Smartt, chairman, Oklahoma state board of public affairs, who will talk on industrial development of Oklahoma; and Robert M. Winsborough, Middle West Service Co., Chicago, scheduled to discuss "Utility Advertising."

Officers Named for Norfolk Wiring Bureau

J. W. Bright, Westinghouse Electric Supply Company, has been named president of the Norfolk, Va., Adequate Wiring Bureau with Harrison White, Chesapeake & Potomac Telephone Company, as vice president, and A. E. Dunn, Virginia Electric and Power Company, secretary-treasurer. C. A. Leonard, of the Virginia Electric Power Company, is chairman of the executive committee.

Hydrogen-Cooled Turbine For Duke Power Station

Capacity of the Duke Power Company's Buck steam station on the Yadkin River near Salisbury, N. C., will be increased by 80,000 kw with the installation of a hydrogen-cooled turbine-generator being built by the General Electric Company. The unit, largest of the Duke Power System, will use 825 lb. steam pressure at throttle, 900 F. temperature, and will operate at 1800 rpm. The present 70,000-kw generating capacity of Buck station is made up of two 35,000-kw G-E units, installed in 1926.

At Duke Power's Cliffside station two other G-E units will go into service early this summer. When these 40,000-kw, 3600-rpm, hydrogen-cooled turbine-generators were ordered last year no larger condensing units of this speed had been built.

Service Awards Initiated By Gulf States Utilities

C. W. Kellogg, president, Edison Electric Institute, was the principal speaker at a general sales meeting held in Beaumont by the Gulf States Utilities Company. The principal purpose of the meeting was to announce the inauguration of a service award plan which will honor those men and women who have helped to build the company through years of faithful service.

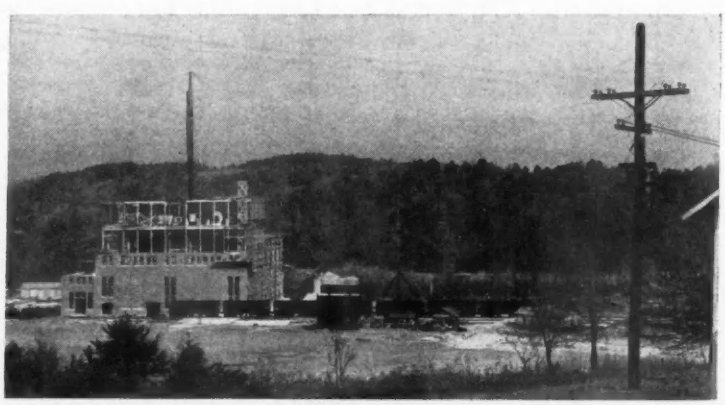
Of 1,459 regular employes, 649 have been identified with the Gulf States Utilities Company for ten years or more. In starting the service award plan, 16 employees qualified for thirty year awards, 112 for twenty year awards, and 521 for ten year awards.

L. F. Riegel, general sales manager, presided over the meeting. Others who addressed the group in addition to Mr. Kellogg, were T. P. Walker, vice president; H. C. Leonard, vice president; E. L. Robinson, power sales manager, and F. P. Allen, merchandise manager. Davis M. Debard, vice president, Stone & Webster, New York, was also in attendance and discussed the prospects of the industry for 1940.

Safety Record Established By Florida Power Corp.

Ten years without a lost-time accident is the record of the Meter Department of the Florida Power Corporation in St. Petersburg. Supt. S. H. Stiles announced that on last December 10 his depart-

(*Continued on page* 58)

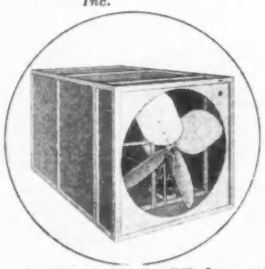


Rapid progress is being made in the construction of the Cliffside steam plant of the Duke Power Company, North Carolina. This photo shows construction progress as of December, 1939.

AIR CIRCULATING AND COOLING EQUIPMENT

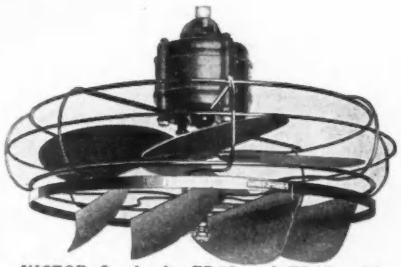
HUNTER Adaptair Hotel Type 52" Ceiling Fan. Instantly adjustable for either up or down draft. Hunter Fan & Ventilating Co., Inc.

NAL'S Deluxe *amliner. Desk* *e Fans avail-* *in a range of* *a from 8" to* *in both AC In-* *tion and Uni-* *al models. Sig-* *Electric Mfg.*



STAKOOL Attic, Window and Floor Fans are sturdily built for quiet, efficient operation. Attic fans furnished with or without tunnels and grills, 4500 to 16000 C.F.M. Five year guarantee E.H.F.A. approved. Manker Products Co., Inc.

MODERNAIRE Console Fan. Completely enclosed assuring positive protection against injury. Safe, portable, noiseless. Does the work of 10 small fans. Dallas Engineering Co.

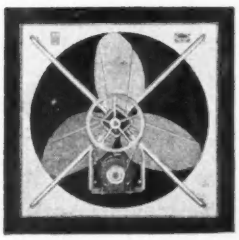


VICTOR Overheads, FS-5Q and FS-6Q, with the revolving "Breeze-Spreader" (finger tip control for degree of air spread) delivers breezes evenly without drafts over a wide floor area. 12 and 16 inch sizes. Victor Electric Products, Inc.

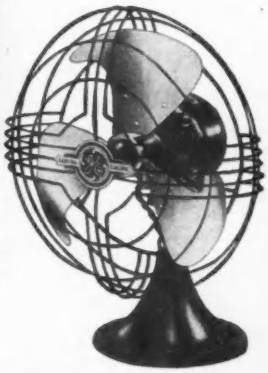
BUFFALO Breez-Air Attic Fans are made in a complete range of sizes, capacities from 4,000 to 17,000 c.f.m. This line features quiet operation, requires no springs or other special mountings. Buffalo Forge Company.

Advertisers In This Issue

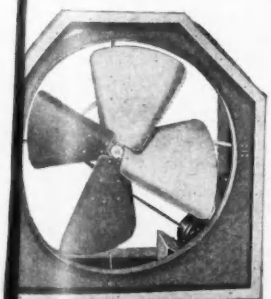
- American Blower Corp.
- American Coolair Corp.
- Autovent Fan & Blower Co.
- Buffalo Forge Co.
- Dallas Engineering Co.
- General Electric Co.
- Hall Mfg. Co.
- Hunter Fan & Vent. Co.
- K & H Mfg. Co.
- Lau Blower Co.
- Manker Products Co.
- Schwitzer-Cummins Co.
- Signal Electric Mfg. Co.
- Victor Electric Products, Inc.



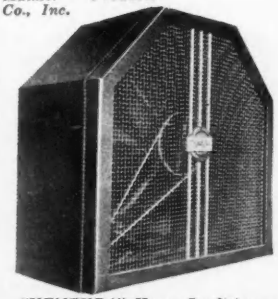
COOLVENT Improved 1940 Comfort Cooling Fans handle more air at slower speeds. Quieter operation. Easier to install. Now available with suction chamber and ceiling grille. Autovent Fan & Blower Co.



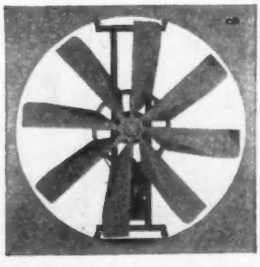
GENERAL ELECTRIC Super-Quiet Fan (oscillating and non-oscillating) with the new scientifically shaped and pitched Vortalex blades for greater air movement and quieter operation. Streamline guard design. General Electric Co.



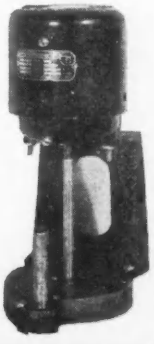
WITZER-CUMMINS Cabinet Mo- *Home Ventilator. 30", 36", 42" and* *diameters. 7,000 to 20,500 C.F.M.* *welded construction. Cabinet in-* *ted for sound proof operation. Fan* *discharge shroud to aid efficiency.* *witzer-Cummins Company.*



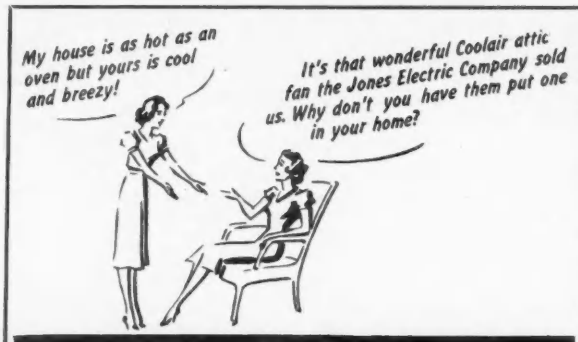
"VENTURA" Home Conditioner attic fan. Compact, self contained acoustically treated steel cabinet. Quiet. Low Operating Cost. American Blower Corp.



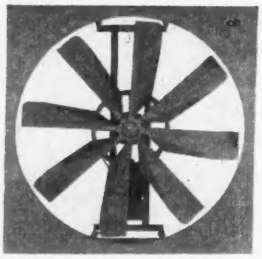
COOLAIR'S improved home-cooling fan for 1940—all moving parts "float" in larger, sound-absorbing springs. Ultra-quiet, easy to install, lightweight steel frame and blades, long hour service motors. 12 sizes for homes, 16 for commercial jobs. American Coolair Corporation.



K & H Evaporative Cooler Pumps. Built for long service. Fully enclosed motor water-proof. Needs oiling only once a year. K & H Mfg. Co.


My house is as hot as an oven but yours is cool and breezy!
It's that wonderful Coolair attic fan the Jones Electric Company sold us. Why don't you have them put one in your home?

Your Profits Multiply When You Sell Coolair Fans



SATISFIED customers are the lifeblood of your business. Without their repeat business, without the sales they steer your way, you'd have a mighty tough fight to make a go of it.

Don't endanger goodwill and lay yourself open to profit-killing trouble calls by selling inefficient, noisy attic fans. Sell Coolair fans and reap golden profits that multiply time after time!

The Coolair line of home-cooling and commercial exhaust fans has been the acknowledged leader of the field for 12 years. Patented built-in springs that eliminate vibration noise . . . permanently silent ball bearings in fan hub, needing grease only once every three years . . . light, compact steel construction throughout . . . certified air ratings . . . economical, trouble-free operation . . . five year factory guarantee . . . these are features that make Coolair purchasers your best salesmen.

Write or wire today for this FREE illustrated catalog full of sales and profit ideas. Get the whole story of how Coolair helps you make fat profits. Join up with Coolair now and be ready to make money when hot weather arrives.

MAIL THIS COUPON TODAY!

Please tell me how I can make money with Coolair this summer.

NAME _____

ADDRESS _____

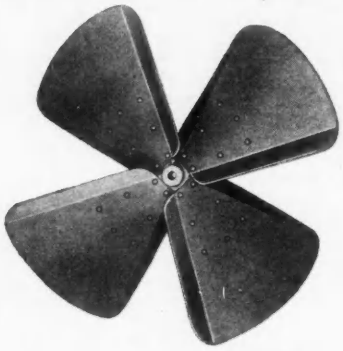
CITY _____ STATE _____

Coolair Ventilating and COOLING Systems

AMERICAN COOLAIR CORPORATION

Manufacturers . . . . JACKSONVILLE, FLORIDA

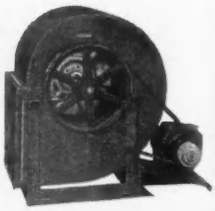
BUY A POWERFUL, SILENT, CODE TESTED FAN BLADE FOR YOUR ATTIC FANS



SIMPLIFY YOUR MANUFACTURING AND SAVE MONEY

Our standard Attic Fan Blade is offered to the industry in all of our regular sizes and capacities. The 30", 36", 42" and 48" Fans have a delivery range from 7,000 C.F.M. to 20,500 C.F.M.

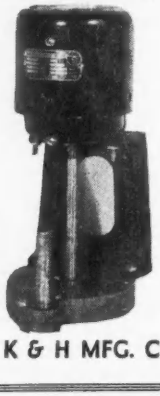
Quiet, efficient Attic Fan Blade Assemblies, carefully balanced and sturdily built assure you a highly saleable unit. Write us for further information and prices.



AIR CONDITIONING BLOWERS

4½" to 50", Single and Double Inlet, catalog available.

BLOWER DIVISION
SCHWITZER-CUMMINS COMPANY
125 FAN STREET INDIANAPOLIS, U. S. A.



K & H Evaporative Cooler Pumps

— Built for Service —

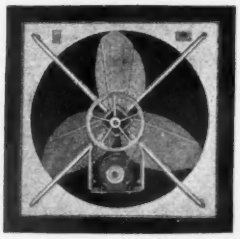
Fully Enclosed Motor (Water-proof) . . Needs Oiling Only Once a year

YOUR PUMP TROUBLES ARE OVER WHEN YOU INSTALL K & H

Write for Information and Prices

K & H MFG. CO., 3410 Ross Ave., DALLAS, TEXAS

COOLVENT ATTIC FANS



NEW BULLETIN JUST OUT SEND FOR IT TODAY!

Fortify your sales with more than pleased customers. Don't gamble on selling just any attic fan.

Coolvent Fans are scientifically designed for quiet, inexpensive, certified rating performance. Backed by over 25 years of fan engineering experience.

New Bulletin gives complete data for figuring installations correctly. Write today and be prepared for real profits.

Members National Association of Fan Manufacturers.

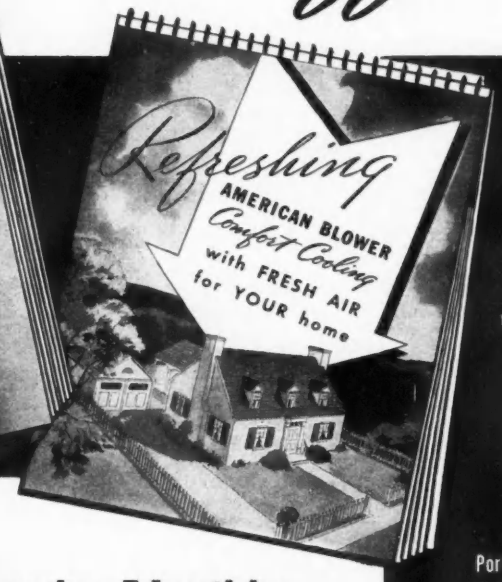
AUTOVENT FAN & BLOWER COMPANY
1825-27 N. Kostner Avenue, Chicago, Illinois

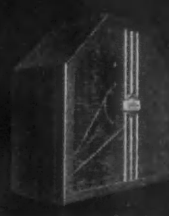
REATEST COMFORT COOLING

and Electric Ventilation

PROMOTION

ever offered!

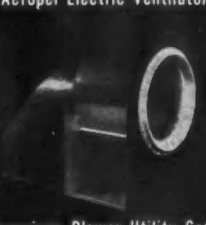




Ventura Home Conditioner

Portable Apartment Conditioner

Aeropel Electric Ventilator



American Blower Utility Set

Ventura Ventilating Fan

tional Newspaper Advertising • Magazine Advertising
aler Direct Mail Program and a Big Rotogravure Magazine
Comfort Cooling and Electric Ventilation Ready Now!

in American Blower takes the lead with the biggest advertising and promoal campaign on Comfort Cooling and Electric Ventilation in history! . . . A ntic nationwide program keyed to crack open a rich, ready market . . . Hardng, fast selling promotion featuring world-famous American Blower products.

u can profit by our great nationwide newspaper and magazine advertising camgn, dealer direct mail, a big, dramatic 16-page rotogravure gazine, and other direct selling aids — all supplied FREE.

Desirable territories are available. Why not make up your mind to cash in? Send the coupon and get the facts on selling Comfort Cooling NOW!

YOU CAN PROFIT MAIL COUPON

AMERICAN BLOWER COMFORT COOLING
Authorized Dealer

You can sell American Blower Products on easy terms through our affiliate, the Heating & Plumbing Finance Corporation.

Send Comfort Cooling and Electric Ventilation data to:

Name_____

Firm Name_____

Address_____

City_____ State_____

AMERICAN BLOWER

MERICAN BLOWER CORP., 6000 RUSSELL ST., DETROIT, MICHIGAN

Division of American Radiator and Standard Sanitary Corporation

Canada: CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONTARIO

When prospects say:

"WE CAN'T AFFORD COOLING SYSTEMS"

-here's YOUR answer!

"The Hall Kumfort Kooler costs about ⅕ as much, does the job because it is engineered for businesses just like yours"

You know from experience, for hundreds of business establishments, the usual cooling system investment is too large for many customers. But, the Hall Commercial Kumfort Kooler is IN LINE, is A UNIT which offices, retail establishments, beauty parlors and many others CAN ALL AFFORD.

Why is this equipment so much lower in price? Chiefly because it is engineered on the evaporative principle, therefore most economical from the manufacturing, installation and operation standpoint.

But you ask, "Does it do the work?" The answer to that is "experience"—experience attested to by hundreds of satisfied users whose letters are in our files.

Dealer Franchises Open — But Hurry

The Hall Commercial Kumfort Kooler opens up new profit-possibilities because it is designed for places where more expensive installations could not be sold. It is easy to install, gives satisfaction, builds other prospects for you. Every sale means a good profit, and an extra profit. Write us today for prospectus and complete details.

HALL MANUFACTURING COMPANY

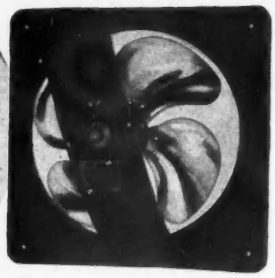
CEDAR RAPIDS, IOWA

A few reasons why HALL Commercial KUMFORT KOOLER IS EASY TO SELL...

1. It costs about one-fifth as much (or less).
2. Operating costs are extremely low.
3. Cools to proper comfort point—8 to 12 degrees below outdoors. "Effective" temperature even lower.
4. Greater employee efficiency results because it uses 100% fresh, washed and filtered air—eliminates three o'clock headaches.
5. Dust, dirt and odors are effectively eliminated.
6. Roto-Atomizer insures even saturation, essential to an effective job of air cleaning and comfort conditioning.
7. Cooling commences the moment the unit is turned on—no long precooling period is necessary.

NOTE: *Factory engineering service is available for analysis of installation data and plans — additional assurance of customer satisfaction.*

STREAMLINE DESIGN.
TOTALLY ENCLOSED MOTOR.
SELF-LUBRICATING BEARINGS, WITH WOOL PACKED OIL RESERVOIR.
CHROME PLATED FAN BLADES.
QUIET OPERATION.
EASY-TO-MOUNT FRAME.



SIGNAL *Challenger* VENT FANS

Establish a new idea of value . . . meet the demand for something modernly different, yet practical, efficient and dependable at outstandingly low price . . . Streamlined, these fans are value plus . . . note the features above . . . adaptable for installation in walls, windows, and transoms . . . write for complete catalog information, and this new 1940 Fan catalog.

Branch Offices: W. E. Hopper, 357-59 Marietta St., Atlanta, Ga. Geo. E. Anderson Santa Fe Bldg., Dallas, Texas

3 SIZES { 10" — $ 9.80 list; 12" — $12.50 list; 16" — $16.50 list

SIGNAL ELECTRIC MFG. CO.
Menominee, Michigan

SIGNAL

..3 C's

YOU CAN PROFITABLY REMEMBER

It's an easy rule to remember when you come to Cleveland. Head right for friendly Hotel Carter and you're sure to enjoy your stay in this friendly city.

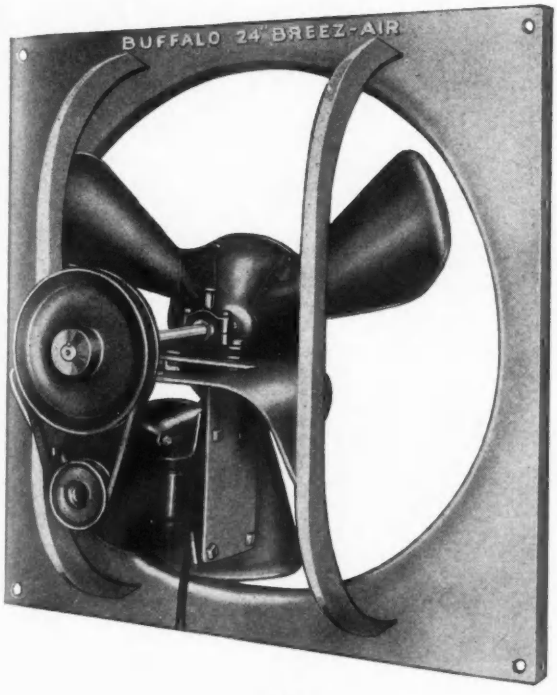
600 outside rooms. All with bath and circulating ice water.
3 air-conditioned restaurants.
EXCELLENT CONVENTION FACILITIES
Single from $2.75 • Double from $4.00

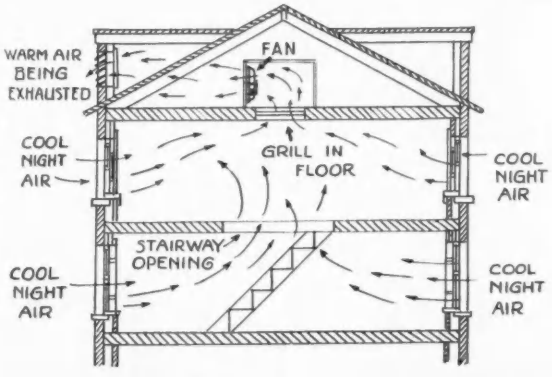
HOTEL CARTER

Prospect near Ninth, Cleveland
FAY M. THOMAS, President-Manager
Affiliated with American Hotels Corporation of N. Y.
J. LESLIE KINCAID, President

Sell the Home Cooling Fan that Builds Your Reputation for

—QUALITY
—DEPENDABILITY





Cooling fan business is growing every year for those distributors and dealers who insist on handling quality fans - - - the only kind that "Buffalo" has made since the inception of home comfort cooling.

Breez-Air Fans are rated according to the Standard Test Code of the National Association of Fan Manufacturers. Because they operate at slow speeds, and have properly designed wheels, they are very quiet.

User-satisfaction comes from quiet, trouble-free operation, from performance in accordance with accurate ratings.

If you want to go into the home cooling fan business to stay, to grow, and to make money, write or wire us for full details regarding the Buffalo Breez-Air Fan franchise.

BUFFALO FORGE COMPANY
210 Mortimer St., Buffalo, N. Y.
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

"Buffalo" BREEZ-AIR FANS for Home Comfort Cooling

"All Fans are alike!"

.... SAID HE

(A General Electric Distributor Salesman Talks to a Dealer)

"All Fans are alike," said he."Zattso?" said I. "Yes," said he, "All fans are the same, and that's that!" "No that's not that! You need fans to supply the demand. Right?" "Right." "Well, you want to sell the best fan. Right?" "Yep." "Then," said I "get a load of this —"

"That G-E motor is as rugged as they make 'em. Why shouldn't it be? G-E has made Fans for over 45 years and these motors keep going, year after year."

"Well-l-l."

"And look at those G-E blades—the result of years of research. G-E was first to develop new quiet blades to improve performance. If they weren't good why would others follow? Sure, you know the answer as well as I do; they are good!"

"Go ahead. I'm learning."

WATCH FOR THE APRIL TRADE ADS. NEWEST G-E UP-TO-THE-MINUTE STYLING WILL BE ANNOUNCED

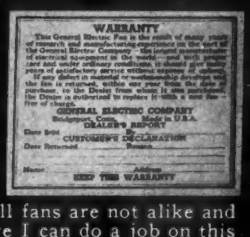
"Another thing. Don't forget appearance—styling is important. G-E fans have quality and performance *plus* modern 1940 styling."

"That's something to think about."

"Yes, and so is this. D'you know that G-E makes the most complete line of Fans in the industry today? Figure it out for yourself—you sell only when you can fill the need. When you sell G-E you've got a Fan for every purpose."

"Good point there."

"Roll 'em all together and add the G-E warranty—no strings—no jokers. So seldom does a G-E Fan give trouble that you can forget about it most of the time. But when you need the manufacturer's 100% backing, you need it quick. G-E gives it to you. And the exact-same warranty is back of every Fan in the G-E line."


WARRANTY

This General Electric Fan is the result of many years of research and manufacturing experience on the part of the General Electric Company, and is guaranteed to be free of electrical equipment in the motor and wiring, and under ordinary conditions, to develop good performance and satisfactory service without expense for repairs.

If any defect in material or workmanship develops and the fan is returned, within one year from the date of purchase, to the Dealer from whom it was purchased, the Dealer is authorized to replace it with a new fan free of charge.

GENERAL ELECTRIC COMPANY
Bridgeport, Conn. Made in U.S.A.

DEALER'S REPORT
Date Sold ... By ...

CUSTOMER'S DECLARATION
Date Returned ... Reason ...

Name ... Address ...

KEEP THIS WARRANTY

"Now you're talking, Mister. I guess all fans are not alike and I'm sure glad to have the story. I figure I can do a job on this line."

"You bet you can! I've only hit the high spots. Read this catalog carefully. You'll find many additional reasons why G-E delivers more customers to dealers than any other electrical manufacturer."

GENERAL ELECTRIC *Fans*

Fan Sales Section, Appliance and Merchandise Dept., General Electric Company, Bridgeport, Connecticut

PLUG IN for Profit!

with VICTOR'S *Thermometer Sensitized* FAN PROMOTION

Feature the VICTOR FAN LINE

MIRACLE BREEZE

HI-BREEZE

OVERHEAD

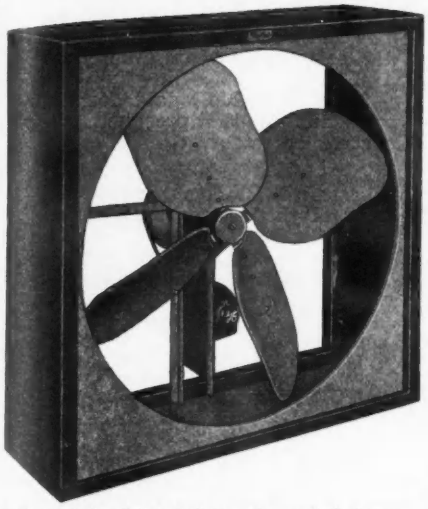
. . . and you will show and sell a line with more talking points, more for your customers, and more profits for you.

The new VICTOR Line is ready —backed by a sales making promotion *Thermometer Sensitized* to make the heat work for you. Rush your request today for the complete story. Get set now for the most profitable FAN year you have yet experienced with VICTOR to lead the way.

VICTOR
ELECTRIC PRODUCTS, INC.
Dept. J-3002, 2950 Robertson Ave.
CINCINNATI, OHIO

Quality is always VICTOR

STAKOOL Ventilating Fans
Attic, Window and Floor Models



LIST PRICES
24" ..... $ 47.50
32" ..... $ 57.50
44" ..... $ 80.00
54" $125.00
4500 to 16000 CFM

•

Low priced, factory-built tunnels, with grilles, or grilles, furnished for attic fans.

•

FAN BLADES
Only $6.90 to $17.50
List Price

•

All prices F. O. B. Factory.

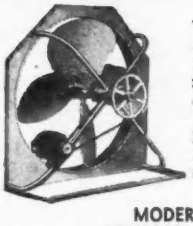
Engineered for Quiet, Efficient, Economical Operation.
G-E Motors with THERMO-TECTORS used exclusively.
E.H.F.A. Approved—Five Year Guarantee.
Liberal Discounts to Distributors and Dealers.
Write for DEALER'S MANUAL, full information for selling and installing fans.

TRADE STAKOOL MARK

Write now to

MANKER PRODUCTS COMPANY, INC.
MEMPHIS, TENNESSEE

Send for this FREE Book



★ Install MODERNAIRE Attic Fans for Summer cooling of homes, apartments, hotels, stores and offices. Unlimited opportunities. We show you how. Write today for information on the MODERNAIRE Attic Fan franchise in your territory.

MODERNAIRE
CONSOLE COOLING

Safe, portable, noiseless . . . costs less than a penny an hour to operate . . . does the work of ten small fans. Completely enclosed offering positive protection against injury. Five year guarantee. Write for Folder E.

HANGING TYPE
CIRCULATING FAN

New design at a new low price. Engineered and built by the originators of the world famous airplane fan. Strong, long range air movement. Price $33.50 with hanger. Write today for Folder S.

MODERNIZE WITH MODERNAIRE

DALLAS ENGINEERING CO.
1115 HALL ST. DALLAS, TEXAS

Connecting Diagrams for Lap-Wound A-c Motors

(*Continued from page* 39)

tion should extend. When E is used it means both leads have the insulation ending at same point.

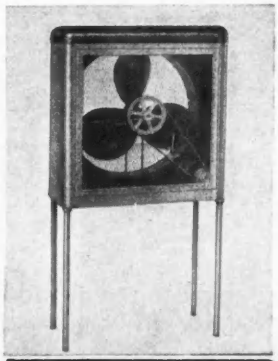
Fig. H shows the method used for leads straight out with starting lead fastened. This is fundamentally the same as Fig. G except that the starting lead is fastened to the nose of the coil and it is covered with the finishing tape up to the point where it emerges at the outer part of the coil.

When using stator coils having long and short leads, as given in the table, the winder must sort the coils into three groups, start all pole phase groups with a long top lead, finish with a long bottom lead coil and use all short lead coils in between. It would be possible to make 48 coils having both leads long and thus have only two groups of coils to handle, but this would waste copper.

The next article will give the first of the eight pole connecting diagrams, the series connections arranged for single or dual voltage. In addition, the discussion on coil leads will be continued.

"I want a quiet operating, low cost portable window fan for cool restful nights . . . and comfort during daytime hours!"

Announcing the NEW
LAU NITEAIR ROOM COOLER



- Portable — Quiet — Low Cost
- Backed by Amazing Merchandise Plan
- For Extra Sales . . . Extra Profits

Don't pass up these profits in your town! Cash in on the big demand for cool summer comfort in the rapidly expanding market for Lau NITEAIR ROOM COOLERS and NITEAIR ATTIC FANS.

Proven fast selling units, they sell on demonstration. And Lau's big 1940 dealer promotion program assures greater sales volumes for Lau dealers than ever before.

New Lau NITEAIR ROOM COOLERS are priced low . . . assure you real profits.

This is your BIG PROFIT OPPORTUNITY of 1940.

Ask Your Jobber or Mail Coupon Today

THE LAU BLOWER CO.
Dayton, Ohio

The Lau Blower Company
2013 Home Avenue
Dayton, Ohio

Without obligation, show me how Lau NITEAIR ROOM COOLERS and ATTIC FANS can help me make more money during the spring and summer.

Firm ..... By .....

Street .....

City ..... State .....

Safety Record Established By Florida Power Corp.

(*Continued from page 50*)

ment which has averaged twelve employees yearly completed their ten-year record. The work of these men consists of testing rubber goods at high voltage, some pole climbing, putting in and taking out meters, testing meters, and similar work where there is danger of accidents occurring. This is an all-time safety record for the company.

New Electric Rates for 200 Oklahoma Towns

Officials of the Oklahoma Gas & Electric Co., and the Oklahoma Corporation Commissions reached an agreement whereby electric rates of the company in Oklahoma will be reduced by about $500,000 annually, effective with bills rendered after March 1.

The rate reductions will apply to over 200 cities, towns and communities served by the Oklahoma Gas & Electric Co., in Oklahoma and Arkansas.

Detailed rate schedules are now in the course of revision. The reductions will apply principally to residential and commercial users.

Mississippi Power Reports Higher Sales—Lower Rates

Rapid growth of a southern power company in a comparatively brief time is shown in figures for the Mississippi Power Company made public recently at Gulfport in connection with the company's fifteenth anniversary.

The figures reveal that in 1925, first year of the company's business, it sold a little more than 15,000,000 kilowatt hours but that in 1939 the business had developed to nearly 160,000,000 kwh.

Beginning with operations in Gulfport, Biloxi, Bay St. Louis and other Gulf Coast cities the company extended its services gradually to the Tennessee line in Northern Mississippi, acquiring small power properties and constructed an interconnected power system that covers the entire operations through the state.

Executives of the company credit much of the increase in power sales to an increase in industries in Mississippi. The company's statement also pointed out that many electric ranges, unheard of in the area when it began operations, now are served in addition to other thousands of electric refrigerators, water heaters, etc.

The company has continued to forge ahead despite seven rate reductions, which lowered schedules from an average of 13.6 cents per kwh when the company began operations, to 3.78 in 1939.

News About Men You Know

Harry E. Simpson, formerly secretary-treasurer of the Florida Power and Light Company, was elected vice-president of the company at a special meeting of the board of directors. Mr. Simpson will fill the vacancy resulting from the advancement of McGregor Smith to the presidency of the company last September.

Mr. Simpson was formerly associated with the Dallas Power and Light Company but has been connected with Florida Power and Light since its organization in 1924.

William R. Blackwood, who also joined the company in 1924, and has been assistant treasurer for the past twelve years, was elected treasurer.

Malcolm B. McDonald, formerly assistant to the president, was elected secretary.

* * *

Frank M. Wilkes, general manager of the Arkansas Power and Light Company, with headquarters in Pine Bluff, Arkansas, was the recipient recently of a gold twenty year service emblem presented by Harvey C. Couch, president of the company.

Mr. Wilkes first became associated with the Arkansas Power

F. M. Wilkes

Company in 1919 as commercial manager. A year later, he was made superintendent in charge of operations, and in 1923, was advanced to the position of general superintendent. He became general manager of the company in 1927.

* * *

R. E. Roesch, who has served the Virginia Public Service Company, Alexandria, Va., for the past twelve years, has resigned his position as division engineer to accept a position with the Stone & Webster Engineering Corporation, Boston.

J. B. Hawkins, who is at present division engineer for the western division of the company, with headquarters in Clifton Forge, will move to Alexandria to take over Mr. Roesch's duties under the title of superintendent of operations of the northern division. Mr. Hawkins is a graduate of V.P.I. and has been associated with Virginia Public Service in various capacities since 1926.

* * *

Norman H. Coit, formerly vice-president and general manager of the South Carolina Electric and Gas Company, was elected presi-

Of the housewife who has spent the greater part of her day in a hot, stuffy kitchen, this "cool" range display commands immediate attention. The display was used effectively in show windows of Florida Power and Light Company.

Hotpoint

VALUE SCOOP!

THE CENTURY
A full-size Automatic Electric Range with Hotpoint quality features at a new low price!

OPENS A BROAD, NEW MARKET WITH THIS FULL-SIZE FAMILY RANGE . . . THE BUY OF THE CENTURY—MADE TO RETAIL AT

$99.50

IN MOST LOCALITIES

FEATURES WITH SOLID SALES PUNCH!

- **MEASURED HEAT—year's greatest feature in electric ranges.**
- **All porcelain enamel.**
- **Three Select-a-Heat Calrod units with 5 measured heats.**
- **One-piece top of Stain-Resistant enamel.**
- **Oversize 6-qt. Thrift Cooker—steams, stews, boils. Cooks complete meals.**
- **Fully automatic, All-Purpose oven with two fast-heating units.**

Lamp and Timer available at slight additional cost.

EDISON GENERAL ELECTRIC APPLIANCE COMPANY, Inc., 5614 West Taylor Street, Chicago, Illinois

Hotpoint ELECTRIC RANGES

REFRIGERATORS • WATER HEATERS • WASHERS AND IRONERS • CLOTHES DRYER • DISHWASHER-SINKS

dent of the company on February 1, 1940. Mr. Coit succeeds to the post formerly held by H. B. Atkin of New York City, who will continue utilities work in the Philippine Islands.

W. H. Kendrick has been advanced from the position of general superintendent in charge of operations to vice-president in charge of operations.

* * *

Fred A. Woodcock, Asheville, N. C., has been appointed manager of the Zebulon district of the Carolina Power and Light Company, succeeding Paul Caswell, who was named manager of the Florence, S. C., district. Mr. Woodcock's experience includes nearly thirty years in the electrical utility field; he has been associated with Carolina Power and Light Company since 1916.

* * *

Fred H. Phillips has been named residential sales manager of the Arkansas Power and Light Company, succeeding Max Sudduth, who has been advanced to the position of assistant general sales manager. Mr. Phillips has been connected with the Arkansas Power and Light Company's sales force since 1935 where he established himself as a master salesman.

In his new capacity, Mr. Sudduth will be in close contact with the appliance merchandising trade of Arkansas.

Personnel Changes Made by Texas Westinghouse Supply

R. G. Berle, manager of the Southwestern District of the Westinghouse Electric Supply Company, recently announced several important personnel changes in his district.

W. G. Sterett, formerly manager of the San Antonio branch of the supply company, has been promoted to the position of manager of the apparatus and supply dept., of the Southwestern District.

Hal. R. Edwards, who has been handling the company's business in western Texas has been transferred to San Antonio where he will take up the duties of branch manager.

E. C. Cummins, formerly office manager of the Fort Worth branch, has been promoted to the position of branch manager, succeeding B. C. Coates who has been transferred to West Texas to handle the company's business in that area.

Electrical Wholesalers to Meet at Hot Springs

The thirty-second annual convention of the National Electrical Wholesalers Association will be held at The Homestead, Hot Springs, Virginia, May 19-23, 1940, according to announcement by E. Donald Tolles, managing director of the association.

H. P. Litchfield Promoted By Graybar Electric Co.

H. P. Litchfield, Graybar branch manager at Newark, N. J., was recently transferred to the general executive offices as general commercial sales manager.

In October 1915, Mr. Litchfield joined the central merchandise department of Western Electric and since that time has acted as credit manager at Boston, assistant sales manager at the New York branch, and since 1925 as branch manager at Newark.

Throughout his business career Mr. Litchfield has been most active in industry associations and community organizations in New York, Boston, and Newark. He has been president of the New York Electrical Credit Association, president of the New England Electrical Credit Association, president of the Essex, New Jersey, Electrical League, president and founder of the New Jersey Council of Electrical Leagues, president of the Newark Rotary Club, member of the Board of Governors of the Newark Athletic Club, and an active member of the Essex County Country Club.

W. G. Sterett H. R. Edwards E. C. Cummins

Southern Section Drive For Membership Continues

Nearly a hundred new members for the Southern Section, International Association of Electrical Inspectors, have been enrolled as the result of a special membership campaign begun last fall, according to Joseph Whitner, secretary-treasurer of the section.

Members who have submitted and endorsed new member applications since the drive began include the following:

Armstrong, W. E.	New York, N. Y.	1
Benefield, F. H.	Atlanta, Georgia	1
Bommer, A. J.	Dallas, Texas	4
Bowry, T. W.	Richmond, Va.	1
Branch, T. P.	Atlanta, Ga.	3
Bulls, Claude V.	Norfolk, Va.	2
Camus, Frank G.	Shreveport, La.	1
Cannady, N. E.	Raleigh, N. C.	1
Dunn, W. Edward	Alexandria, Va.	1
Evans, Carl W.	Atlanta, Ga.	3
Goodson, Fred	Houston, Texas	6
Hendricks, R. B.	Austin, Texas	1
Hancock, A. E.	Llano, Texas	10
Littlefield, R. T.	Jesup, Ga.	2
Johnson, Dewey	Atlanta, Ga.	1
Kenderdine, E. L.	Fort Worth Texas	2
Knoderer, H. G.	Bridgeport, Conn.	1
Hinton, Thos. E.	Schulenburg, Tex.	1
Miller, G. M.	Richmond, Va.	4
Muller, P. L.	New Orleans, La.	1
Muths, S. L.	Gulfport, Miss.	1
Pockrus, L. S.	Tyler, Texas	2
Pyles, J. Warner	Washington, D. C.	2
Segall, B. Z.	New Orleans, La.	2
Sprouse J. B.	Clarksdale, Miss.	2
Taylor, W. R., Jr.	Atlanta, Ga.	1
Wagner, C. M.	Hondon, Texas	1
Walthall, J. D.	Homer, La.	1
Wheeler, Chet	New Orleans, La.	2
Whitaker, C. S.	Durham, N. C.	4
Whitner, Jos.	Atlanta, Ga.	8
Zimmer, Chas. S.	Houston, Texas	1
Miscellaneous	(not endorsed)	13
Total		87

Durham Group Recommends Uniformity in Electrical Wiring

Electrical contractors, electricians and electrical inspectors, of Durham, N. C., gathered at a special meeting, February 7, to consider a plan to develop "greater uniformity of electrical wiring practices." C. S. Whitaker, city electrical inspector, and president of the Southern Section, International Association of Electrical Inspectors, who called the meeting, said he hoped the session would mark the beginning of a widespread movement designed to establish uniform wiring regulations and practices in various sections of the nation.

Mr. Whitaker said that he was delighted with the results of the first meeting and that every effort would be made to clarify wiring regulations in Durham and to develop more uniform practices among contractors.

In addition to the fact that some contractors "barely skim the ragged edge of minimum requirements in their work," Mr. Whitaker said that "lack of uniformity of wiring practices causes confusion on the part of the public in that many bids sent in on wiring projects are not in conformity with each other."

IT'S RING-TIME for

WESTINGHOUSE REFRIGERATOR RETAILERS

Don't miss the big Westinghouse "Ring-Time" Meetings . . . there'll be one near you soon!

Yes! Spring time is "Ring-Time" this year for Westinghouse Refrigerator Retailers! The new "Faster for '40" Pacemaker Refrigerator Line is sounding a new note in style, features, and all-around *salability*. Prices are down to strictly competitive levels —with something *extra* for you to offer in every model. "Selling up" is made easier than ever—profit opportunities amazingly increased. You'll agree that Westinghouse "rings the bell" as never before when you get this sensational product story at the coming "Ring-Time" Meetings.

But you'll find *product* only *half* the story at these meetings! To help you ring up a bigger share of 1940's $50,000,000 range and refrigerator market, Westinghouse will ring up the curtain on the most complete seasonal advertising and promotion program in Westinghouse history! Magazines! Newspapers! Radio! Demonstrations, displays, dynamic local promotions! A wealth of selling help from contact to closing —including a brand-new, sure-fire traffic-building plan that's too good to disclose here. Learn all about it at your local "Ring-Time" Meeting.

You're invited! *Make no commitments* of any kind until *after* this meeting. Plan for a ringside seat at "Ring-Time," and see for yourself how much *more* Westinghouse offers for 1940!

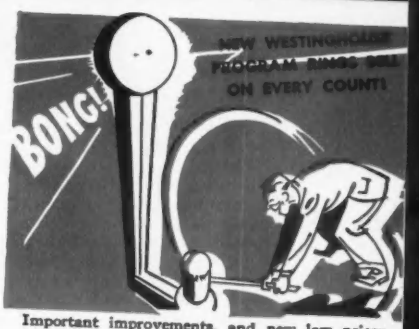
WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, DEPT. 101, MANSFIELD, OHIO

"RING-TIME" MEETINGS SCHEDULED IN THESE CITIES:

Akron, O.	Columbus, O.	Little Rock, Ark.	Orlando, Fla.	San Francisco, Calif.
Albany, N. Y.	Dallas, Tex.	Los Angeles, Calif.	Philadelphia, Pa.	Scranton, Pa.
Atlanta, Ga.	Dayton, O.	Louisville, Ky.	Phoenix, Ariz.	Seattle, Wash.
Birmingham, Ala.	Denver, Colo.	Memphis, Tenn.	Pittsburgh, Pa.	Spokane, Wash.
Boise, Idaho	Des Moines, Ia.	Milwaukee, Wis.	Portland, Ore.	Springfield, Mass.
Boston, Mass.	Detroit, Mich.	Nashville, Tenn.	Raleigh, N. C.	St. Louis, Mo.
Buffalo, N. Y.	Houston, Tex.	Newark, N. J.	Richmond, Va.	St. Paul, Minn.
Charlotte, N. C.	Huntington, W. Va.	New Orleans, La.	Rochester, N. Y.	Syracuse, N. Y.
Chicago, Ill.	Indianapolis, Ind.	New York, N. Y.	Salt Lake City, Utah	Toledo, O.
Cincinnati, O.	Kansas City, Mo.	Oklahoma City, Okla.	San Antonio, Tex.	Washington, D. C.
Cleveland, O.	Knoxville, Tenn.	Omaha, Nebr.	San Diego, Calif.	Wichita, Kan.

"RING-TIME" DATES BETWEEN MARCH 8 and APRIL 12

ASK YOUR WESTINGHOUSE DISTRIBUTOR FOR DATE OF YOUR MEETING



Important improvements, and new low prices will be dramatized in smashing full color magazine advertising, key city newspapers, the 97-station "Musical Americana" weekly radio program and the new "Ring-Time" promotion.

Complete sales training and selling help program makes it easier than ever to demonstrate greater Westinghouse value. Every type of retail outlet will benefit from this new and broader assistance, covering every step of the sale.

Westinghouse price reductions protect retail profits, not only through greater volume, but in actual dollars-and cents per sale! What you will learn at your local "Ring-Time" meeting will be reflected in your balance sheet and bank account.

TUNE IN "MUSICAL AMERICANA"

Thursdays, 8 P.M. Eastern Time, 7 P.M. Central Time, N.B.C. Blue Network. (8:30 P.S.T; 9:30 M.S.T.)

Westinghouse Refrigerator

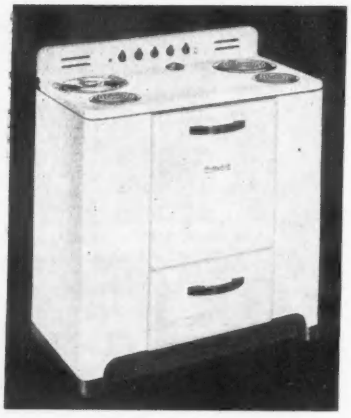
THE PACEMAKER . . . NOW FASTER FOR '40!

MANUFACTURERS' News

Hotpoint Announces New Low Priced Range

Announcement has just been made by Ward Schafer, manager, Hotpoint Electric Range Division, of a new, full-size, top quality Hotpoint electric range model, having standard 1940 equipment, which will sell in most localities for under $100. Mr. Schafer stated, "This is the first time in the history of the electric range industry that a range having the high-quality construction and modern features which are synonomous with the name 'Hotpoint' has been available in the hundred dollar price bracket."

The new Hotpoint Century (model 109RB18) is an addition to the Hotpoint 1940 line. It is all-porcelain finished, built-to-the-floor, battleship construction, with the famous one-piece Monotop cooking top.



Surface units are the new 1940 Hi-Speed Calrod with five heats, hinged connection blocks, and one-piece, polished aluminum reflector pans. There are two Utility size units (1250-690-310-170-75 watts) and one Giant size unit (2100-840-505-210-125 watts). The famous three-heat Thrift Cooker (625-125-100 watts) has the new 1940 aluminum cooker pail, with quart markings embossed on the side, and is equipped with an aluminum trivet. Cooker uses are stamped on the inside of the double cooker lid.

This new range is equipped with an extra-large, double-unit oven, providing four different types of heat for various baking and roasting operations. Wattages of the upper unit are 220-500 watts; lower unit, 2000 watts. A dependable Hotpoint bimetallic type oven temperature control maintains accurate temperatures for all oven cooking. There are two bright, nickel-finished, adjustable shelves with lock stop and back rail. One shelf is reversible. Shelf supports are embossed into the oven lining.

Customer Research Staff Initiated by Frigidaire

An entirely new activity for its sales and marketing departments is announced by the Frigidaire Division, General Motors Sales Corporation, with the creation of a "Customer Research Staff" that began active operation in February.

In formulating a program for this new activity, company officials declare, Frigidaire will follow closely the methods originated by the Customer Research Staff of General Motors Corporation which has pioneered many new ideas in this growing field.

For a number of years, General Motors Corporation has been building its products and developing sales policies based on the findings of its Customer Research Staff. Frigidaire, it is announced, plans similar studies in order to develop its lines of electric refrigerators, electric ranges, electric water heaters, electric air conditioning units, and commercial refrigeration equipment, in a manner that will conform much more closely with specific desires of users and potential buyers.

Atlanta Warehouse Opened by National Electric Products

A southern district warehouse opened for the convenience of the electrical trade in the South has been opened by the National Electric Products Corporation, of Pittsburgh, at 188-192 Walton Street, Atlanta, Ga. The new warehouse, with 18,000 square feet of space, will include a complete stock of all National Electric Products Corp. materials except rigid conduit.

The company's factory branch office is still maintained in Healey Building, Atlanta, with J. M. Moore as divisional sales manager. This office has been maintained since 1916, serving as southern district headquarters for much of this time as it does today. Branch offices of the Southern District are maintained at Birmingham, Charlotte, Miami, New Orleans, and Richmond.

View of National Electric Product's new Atlanta warehouse.

Training Program for Retail Salesmen Announced by G-E

Plans for organizing retail salesmen of General Electric home appliances into a single cohesive unit—the "Retail Development League"—for purposes of training and ultimately greater profit to every link in the distribution chain have just been announced by G-E executives at Bridgeport, Conn., headquarters of the company's appliance and merchandise department.

The disclosure of the plan, considered by its sponsors the most ambitious attempt ever made within the confines of the electrical industry to solve the increasingly complex problems of appliance merchandising, came with the departure of several groups of sales officials who are to start the organization on its first steps in key sections of the country.

The plan of the Retail Development League, while national in scope, has been tested in every detail in certain distributor territories, declares C. M. Snyder, G-E appliance assistant manager. Years of experience in sales training have been drawn upon in the scheme's preparation, and General Electric is estimating that three years of effort will be necessary before every step will be realized.

Jean DeJen, in charge of the company's retail development section, has been responsible for working out the details of the league's organization, and as its president will actively direct the program. On its governing

NEW IMPROVED 1940

HOTPOINT CALROD

low Available for eplacement Sales

lake 2-Way Profit from Sales f Calrod Replacement Units, hich fit practically all Electric Ranges now in use.

1 MODERNIZATION OF OLD ELECTRIC RANGES..

fers a rich profit opportunity that can now be tapped rough Hotpoint's ingenious new 1940 Calrod Replacement Plan.

Over a million old-style electric ranges are waiting be brought up-to-date in operating efficiency and conomy with Calrod Measured Heat. And Hotpoint rovides the program.

2 NEW SALES OF HOTPOINT ELECTRIC RANGES...

an be yours in abundance by using this Calrod Replacement Plan. It offers the greatest "door opener" for range alesmen yet devised. You get two chances at profit.

1. You can modernize the prospect's old range or,
2. You can demonstrate and sell a new 1940 Hotpoint Range with Calrod Measured Heat.

FASTER—Starts cooking in less than half minute.

LIGHTER — by 20% than other rod units.

New 1940 Self-Cleaning Calrod

New Calrod coils burn themselves clean of normal spillage. Easily removable, polished aluminum reflector can be washed like a pie tin.

Calrod is the only unit with terminals located on the side, away from spillage and heat zones. Calrod is the only unit with *Inconel* metal sheath containing 94% of nickel and chromium. Calrod is the only unit built of corrosion-resisting materials throughout.

●

Over a Million Electric Ranges Waiting to be Modernized

Cash in on the big public interest in "Measured Heat" cooking by modernizing old-style electric ranges with the great new 1940 Calrod Replacement Plan.

Your customers are pre-sold by Hotpoint's great national advertising program.

Now you can sell this market easily with quick turnover of stock because Calrod sells at prices 12% to 18% lower than formerly. Only 7 Stainless Steel adapter rings needed to fit practically all ranges now in use. Get all the details about this great plan now. Talk to your Hotpoint district representative or distributor.

EDISON GENERAL ELECTRIC APPLIANCE CO., INC.
5614 W. Taylor Street, Chicago, Illinois

Hotpoint

Calrod

THE ONLY ELECTRIC RANGE SURFACE UNITS WITH INCONEL SHEATH AND GLASS SEALED TERMINALS

RUBBER COVERED POWER CABLES • BUILDING WIRE

CRESFLEX NON-METALLIC SHEATHED CABLE • SERVICE ENTRANCE CABLE • MAGNET WIRE • BARE WIRE

VARNISHED CAMBRIC • FLEXIBLE CORDS • LEAD-ENCASED AND PARKWAY CABLES • ARMORED CABLE

"Remember, this wire will be immersed in water for long periods."
"And it must resist the action of acids, alkalis and salts."
"We can't use lead sheath either. Too many difficult pulls and too much vibration."

In that Case, gentlemen, you need

CRESCENT IMPERVEX

Moisture Resisting Rubber Covered

BUILDING WIRE

Now, this superior insulation is available for building wires where they are to be installed in moist locations and where lead sheath is not acceptable. CRESCENT IMPERVEX building wire is especially suitable for replacing lead sheathed wires in existing conduits when increasing the capacity of the system. Due to its smaller overall diameter, more wires of the same size or wires of larger gauge may be used.

SEND FOR NEW BULLETIN ON CRESCENT IMPERVEX

CRESCENT INSULATED WIRE & CABLE CO. INC

TRENTON, NEW JERSEY

SOUTHERN REPRESENTATIVES

ATLANTA, GA.
Edgar E. Dawes
A-4 Rhodes Bldg. Annex

NEW ORLEANS, LA.
Paul Hogan, Jr.
823 Perdido St.

CRESCENT ENDURITE SUPER-AGING INSULATION

board are C. M. Snyder, assistant manager of the G-E appliance and merchandise department, as chairman, and representatives of every appliance product line and merchandising activity. Headquarters will be in Bridgeport, and its 12 district offices will coincide with the company's appliance sales districts.

All appliance distributors who accept membership in the league and agree to conform to its requirements will be chartered as "grand chapters," and retail chapters—the backbone of the plan—will be organized in each distributor's territory, the number depending upon the local requirements. These chapters will have meeting rooms, officers, dues, planned programs, and many of the characteristics of a national social or fraternal organization. Each chapter, consisting of a minimum membership of ten retailers or retail salesmen of G-E appliances, is to be located within easy driving distance of its members. The 1940 objective of the league officers is to establish 500 chapters, or key training points, and 60 distributor grand chapters.

Demonstration Model House Offered as Dealer Sales Aid

Newest sales help offered by the Lau Blower Company, Dayton, Ohio, to dealers and jobbers selling Niteair attic fans and room coolers is a model house with miniature Niteair attic fan for demonstration either in the dealer's display room or in the prospect's home.

This model home makes an attractive display for showroom or window. Painted cream color with simulated clapboards and green shutters, a green roof and simulated shrubbery around the base of the house, this house has a miniature Niteair fan with vent box style installation over the attic stairway.

A large cellophane window in the roof and cellophane windows permit anyone to see inside the house and watch the air circulated by the fan lift window curtains and move cellophane air current streamers. Cigarette smoke blown in through the downstairs window travels through the house and is exhausted through the attic window.

The house is light in weight and can be easily carried by one person, yet it is sturdily built. A convenient length of cord permits the demonstrator to plug the fan into any 110 volt a-c outlet.

1940 Refrigeration Devices Displayed by York Corp.

At the Jung Hotel in New Orleans, February 26th and 27th, one hundred fifty executives, distributors and branch office representatives of the York Ice Machinery Corporation from the southern area gathered for one of the most dramatic and far-reaching sales conferences ever held in the industry. Feature of the meeting was "York's Parade of Progress"—a dramatic stage presentation of air conditioning, refrigeration and heating equipment for 1940.

A tradition-breaker in the re-

We Can Help
You Do Your Buying

ELECTRICAL SOUTH WILL GLADLY HELP YOU DO YOUR BUYING . . . TELL US WHAT YOU WANT AND WE CAN SAVE YOU TIME AND POSTAGE

The manufacturers who advertise their products in ELECTRICAL SOUTH are obviously making a special and direct effort to secure southern business. These manufacturers, in nearly every case, have representatives located throughout the South and have distribution facilities to give the southern trade prompt and efficient service.

Look over the items advertised and described in this issue of ELECTRICAL SOUTH and if you will tell us the ones in which you are interested, we shall be glad to have manufacturers send you further information about them.

You will find listed on the back of this page the firms whose goods are advertised. A number is placed immediately preceding each name. On the post card below are shown corresponding numbers. All you have to do is to circle or check the numbers on the card that correspond with the numbers which precede the names listed on back of this page. Mail the card to us. It requires no postage. We will gladly forward your name to the manufacturers indicated by the numbers checked and ask them to send you additional information.

No Postage Required . . .

THIS CARD IS FOR YOUR CONVENIENCE

See Names of Manufacturers On Back of This Page

Postage Will Be Paid By W.R.C. Smith Pub. Co.

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 582, SEC. 510, P. L. & R., ATLANTA, GA.

ELECTRICAL SOUTH
1020 GRANT BLDG.
ATLANTA, GA.

ADVERTISER'S INDEX

Coupon Card Number		Page Number
1	Adam Electric Co., Frank	9
2	All-Steel Equip. Co.	4
3	Aluminum Co. of America	*
4	American Blower Corp.	53
5	American Coolair Corp.	52
6	American Steel & Wire Co.	45
7	Anaconda Wire & Cable Co.	10
8	Automatic Electric Mfg. Co.	70
9	Autovent Fan & Blower Co.	52
10	Buffalo Forge Co.	55
11	Carpenter Mfg. Co.	73
12	Columbia Steel Co.	45
13	Couch Co., Inc., S. H.	69
14	Crescent Insulated Wire & Cable Co., Inc.	64
15	Dallas Engineering Co.	57
16	Dolph Co., John C.	*
17	Edison General Electric Appliance Co.	5, 59 and 63
18	Frederick Iron and Steel Co.	*
19	General Cable Corp.	67
20	General Electric Co., (Fans)	56
21	General Electric Co., (Insulating Materials)	7
22	General Electric Co., (Lamps)	14
23	General Electric Co., (Ranges)	8
24	General Electric Co., (Refrigerators)	2
25	General Electric Co., (Wiring Materials)	Back Cover
26	Graybar Electric Co.	47
27	Greenlee Tool Company	72
28	Hall Mfg. Co.	54
29	Hazard Insulated Wire Works	1
30	Hotel Carter	54
31	Hotels Dinkler	73
32	Hotel Lennox	72 and 74
33	Hotel Mayfair	72 and 74
34	Hotel Wolverine	73
35	Hubbard & Co.	3
36	Hunter Fan & Ventilating Co., Inc.	Front Cover
37	Hygrade-Sylvania Corp.	12
38	Ideal Commutator Dresser Co.	74
39	K. & H. Mfg. Co.	52
40	Knox Porcelain Corp.	43
41	Lau Blower Co.	57
42	Linemen Protector Co.	70
43	Manker Products Co.	57
44	Okonite Co.	1
45	Porcelain Products, Inc.	70
46	Reed Unit-Fans, Inc.	*
47	Revere Electric Co.	73
48	Rogers, C. B.	70
49	Signal Electric Mfg. Co.	54
50	Superior Porcelain Co.	74
51	Square D Company	Inside Back Cover
52	Schwitzer-Cummins Co.	52
53	United States Steel Co.	45
54	Victor Electric Products, Inc.	56
55	Walker Electrical Co.	71
56	Ward Leonard Electric Co.	68
57	Westinghouse Elec. & Mfg. Co., (Ranges)	*
58	Westinghouse Elec. & Mfg. Co., (Refrigerators)	61
59	Westinghouse Elec. & Mfg. Co., (Water Heaters)	*
60	Wiegand Co., Edwin L.	6
61	Wiremold Company	49
62	Youngstown Sheet & Tube Co.	Inside Front Cover

CHECK OR CIRCLE NUMBERS—SIGN—MAIL

March, 1940

Electrical South, Grant Bldg., Atlanta, Ga.

Gentlemen: I am interested in the advertisements of the firms checked. Please forward my name to manufacturers or nearest representative or jobber.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
52	53	54	55	56	57	58	59	60	61	62						

Name _____ Title _____

Company _____

Address _____

City _____ State _____

Readers' Service

No Postage Required

Often our readers would like to secure additional information on certain lines advertised in the paper but do not have the time to write for it.

Use This Card

GENERAL CABLE

BARE and INSULATED WIRES and CABLES for EVERY ELECTRICAL PURPOSE

General Cable Corporation Sales Offices: ATLANTA • BOSTON • BUFFALO • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DETROIT KANSAS CITY (MO.) • LOS ANGELES • NEW YORK • PHILADELPHIA • PITTSBURGH • ROME (N.Y.) • ST. LOUIS • SAN FRANCISCO • SEATTLE • WASHINGTON (D.C.)

frigeration field is the new FlakIce "Cold Magic" machine, a small self-contained unit capable of producing 2000 pounds of pure ice in curved ribbon form every twenty-four hours. This machine and many other pieces of new equipment were on exhibit.

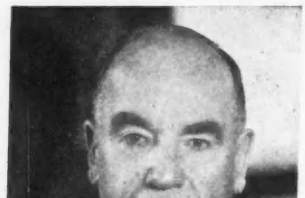
President Stewart E. Lauer stated that the business of the corporation had been good and that he expects continued improvement in 1940.

"This year," added Mr. Lauer, "our organization will concentrate more than ever on the commercial refrigeration and air conditioning fields and will introduce a number of completely new lines of 'packaged' equipment."

News About People—

In recognition of his outstanding contribution to progress, through pioneering of tre electric range, **George A. Hughes**, president of the Edison General Electric Appliance Company, Inc., more popularly known as The Hotpoint Company, was selected by a committee of distinguished scientists to receive a Modern Pioneer Award.

Presentation was made at the Chicago Modern Pioneers' dinner at the Palmer House, Chicago, February 20, 1940. This honor was conferred on Mr. Hughes by the National Association of Manufacturers as part of the national Modern Pioneers' program, commemorating the 150th anniversary of the founding of the Amercian patent system. The committee which



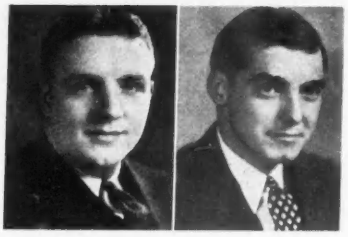
George A. Hughes

chose Mr. Hughes for a Modern Pioneer Award, headed by Karl T. Compton, president, Mass. Institute of Tech., is an independent group of eminent scientists, not a committee of the National Association of Manufacturers.

* * *

A number of personnel changes and advancements were announced by General Electric Company during the past month. Among these were the following:

The appointment of **Elmer C. Dvorak** as sales manager of General Electric ranges, and that of **Ray Rich** as



E. C. Dvorak Ray Rich

sales manager of G-E water heaters, has been announced by **J. R. Poteat**, manager of the company's water-heater-range section at Bridgeport, Conn. Both were introduced to distributors in their new capacities during the recent distributor convention.

David C. Spooner, Jr., associated with General Electric appliance activities for more than 20 years, will manage a newly formed "pioneer products" section of the G-E appliance division, effective at once, it has been announced by **H. L. Andrews**, vice president. The section will handle new products not logically falling within the scope of existing sections, and such other products as may be assigned to it.

Alfred C. Sanger, who for the past several months has served as sales manager of the General Electric household refrigerator section, has been named manager of the G-E heating device and fan section, effective at once. Mr. Sanger succeeds C. J. Hendon who has resigned after serving several years in that post.

The new sales manager for R-E refrigerators is **L. H. Miller**, who since the consolidation of G-E appliance activities at Bridgeport has been manager of merchandising services. The functions of the latter section have been re-allocated in the department.

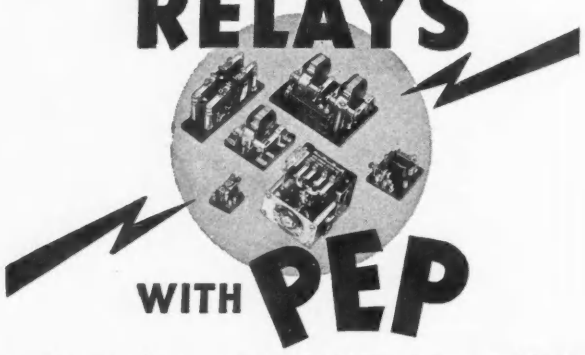
F. A. Parnell, who has long been identified with General Electric's construction materials division at Bridgeport, Conn., has relinquished his duties as sales manager of conduit products to become associated with the General Electric home bureau and will henceforth handle sales development and distributor contact assignments, according to **C. W. Stuart**, home bureau manager.

* * *

After 14 years active service as president of his own business, James R. Kearney, Sr., St. Louis manufacturer of overhead and underground utility equipment and veteran of the electrical industry, will become active chairman of the board of his com-

J. R. Kearney, Sr. J. R. Kearney, Jr.

RELAYS



WITH PEP

The conciseness characteristic of all Ward Leonard Relays, is due to sound engineering and careful workmanship. The very attributes that impart precision assure ruggedness and long life. Ward Leonard Relays are made in a wide variety of sizes, types and contact arrangements. Send for Bulletins describing relays of interest to you.

Southern Representatives:

Mr. John S. Clark
1100 E. Missouri St.
P. O. Box 143, Station A
El Paso, Texas

C. B. Rogers
Zahner Building
1000 Peachtree St., N. E.
Atlanta, Ga.

Brance-Krachy Co.,
4411 Navigation Blvd.
Houston, Texas

Electron Engineering Co.
1811 Masonic Temple Bldg.
New Orleans, La.

Mr. Allen Stanwix-Hay
2132 Myra St.
Jacksonville, Florida

A. L. Pollard
P. O. Box 1452
Knoxville, Tennessee

WARD LEONARD

37 SOUTH STREET MOUNT VERNON, N. Y.

pany and his son, James R. Kearney, Jr., who has grown with the organization from advertising manager to executive vice president, will assume the duties of president of the Corporation.

Mr. Kearney, Sr., inventor of some twenty electrical items, but particularly well known for his aggressive pioneering of the use of solderless wire connectors for making electrical connections, instead of hazardous solder, organized his company in 1926 with a few patented products to manufacture and five men to help him launch the enterprise. The company has enjoyed rapid growth and today numbers its employees at several hundred.

* * *

Cutler-Hammer, Inc., Milwaukee, Wisconsin, manufacturers of electrical control apparatus, announces the appointment of **E. K. Anderson** as manager of the company's branch office at Dallas, Texas. This office

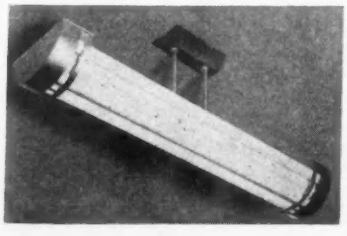
E. K. Anderson

serves the states of Arkansas, Texas, Oklahoma and the southern part of New Mexico. Located at 24 Santa Fe Building, the Dallas branch office is under the direct supervision of **G. E. Booth,** district manager, located at St. Louis.

Commercial Fluorescent Unit

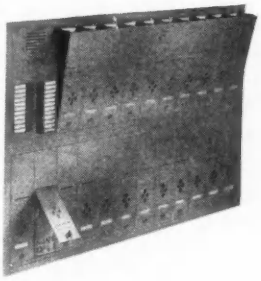
A complete fluorescent lighting unit for general commercial lignting —the Hygrade Miralume HF-200— has been announced by Hygrade Sylvania Corporation, Salem, Mass. This highly efficient unit comes complete with four 40 watt (48") Hygrade fluorescent lamps, and with all wiring and fittings. ready to install, nothing else to buy.

Like the industrial unit (Miralume HF-100) previously announced by this company, the HF-200 is corrected for power factor, and stroboscopic effect is practically eliminated. Over-



Estab. Couch TELEPHONES TRADE MARK 1894

PRIVATE TELEPHONES



APARTMENT HOUSE PHONES & MAIL BOXES

FIRE ALARM SYSTEMS

CODE CALL SYSTEMS

Blake TRADE MARK

INSULATED STAPLES

"POWERITE" BATTERY ELIMINATORS
CABLES — JUNCTION BOXES

S. H. COUCH COMPANY, INC.
North Quincy, Mass.

ATLANTA—William E. Hopper, 357-9 Marietta Street
BALTIMORE—Paul F. Douty, 16 East Franklin Street
DALLAS—Ernest L. Wilks—7935 Eustis Street
LOUISVILLE—C. C. Baines—4107 River Park Drive
NEW ORLEANS—Lyman C. Reed—811 St. Charles Street
OKLAHOMA CITY—W. C. Bilyeu—3005 North Hudson
RICHMOND—L. W. Roberts—111 North Eighth Street

all length is 48½"; overall width is 10½"; and overall height is 7¾". Units available for 110-125 volts and 220-250 volts operation, can be installed in any standard 60 cycle a-c circuit.

These new commercial units were designed for general use in such locations as stores, offices, showrooms, and a wide range of general commercial applications where higher levels of illumination are desired. In addition to supplying several times as much light, these units supply light that is cooler and better diffused. A choice of daylight or white lamps is offered to users of these units.

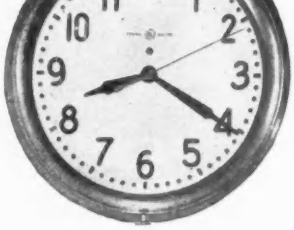
Transformer Protectors

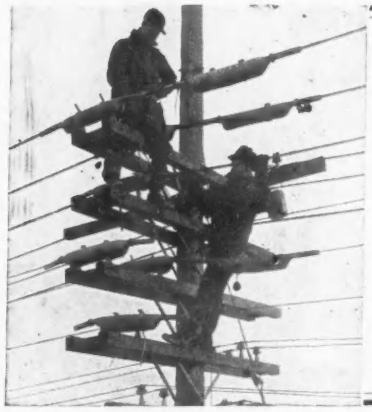
"Protectors" announced by the Walker Electrical Company, Atlanta, Ga., are designed for the protection of rural transformers and are said to be ideal for the 600-watt transformers of the rural type, as well as the larger size transformers. The protector may be located in any position on the pole, below the transformer, making it accessible from the ground to the customer.

It is dead front operated and the live parts can be sealed to prevent tampering. Operation is on the magnetic principle only and the secondary can be opened on current from 50 milliamperes to 50 amperes, for two and three wire service.

Self Starting Clocks

A wide range of self-starting electric clock models are described in a folder recently issued by General Electric Company, Bridgeport, Conn. Alarm clocks, occasional clocks, man-



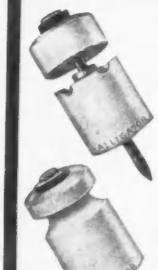


MARSHALL'S
ONE-PIECE
LINEMEN'S SHIELDS
PROTECT THOROUGHLY

These famous shields not only meet all safety codes, but are built to give more *thorough* protection. They may be used on single or double cross-arm jobs. They cover wire and two insulators completely, stand up under long hard usage and are more easily and quickly handled due to one-piece construction.

Over 1,000 utilities now standardize on MARSHALL'S SHIELDS. May we send prices and full information? Drop us a card today.

LINEMEN PROTECTOR COMPANY
1744 W. Alexandrine Detroit, Mich.



ANNOUNCEMENT!

We are pleased to announce the

George R. Koeln & Company
376 Nelson Street, S. W.
Atlanta, Georgia
Telephone—Main 7077

as our representative in Alabama, Florida, Georgia, North Carolina, South Carolina, and Tennessee. As in the past, we will continue to maintain our record of prompt and efficient service, which, coupled with our quality line of material, plus an Atlanta warehouse stock, will build repeat business for you.

PORCELAIN PRODUCTS, Inc., Findlay, Ohio

180 AMPERE
HEAVY-DUTY, SOLENOID-TYPE TIME SWITCH

For those heavy loads to be automatically time controlled each day, the Model 1290 AUTOMATIC Time Switch has two knife-blade poles with a capacity of 90 amperes each; 180 amperes on a split load!

A companion model is the Number 1250 with a capacity of 50 amperes on each of its two poles, or 100 amperes on a split load.

Write For Information and Discounts

Automatic Electric Mfg. Co., Mankato, Minn.

C. B. ROGERS

ELECTRICAL HEATING ENGINEER
CHROMALOX
ELECTRICAL HEATING UNITS
and
CHROMALOX
EQUIPPED PRODUCTS

1000 PEACHTREE STREET
ATLANTA, GEORGIA

The "Handbook of Interior Wiring Design"

This valuable new handbook is the first standard of wiring adequacy equally acceptable to all branches of the electrical industry and is sponsored by the eight National Associations. It fills a long-felt need in dealing with the problem of inadequacy in wiring capacity and the handicap it places on electrical progress.

In preparing this Handbook, the authors have endeavored to create a reference book of value to the designer of those installations not normally handled by a consulting electrical engineer or by firms that undertake large special structures and maintain engineering staffs.

In general, the Handbook discusses "why" adequate wiring is needed, "what" must be installed to supply those needs, and "where" it should be placed. It is distinctly not a booklet on "how" to wire in the sense of covering specific wiring materials and their installation. Every effort has been made to include all of the factors that enter into the smaller job while only an outline of proceedure has been given for larger installations.

This valuable handbook can be secured with a 3-year subscription to ELECTRICAL SOUTH for $2.50 or with a 5-year subscription for $3.50.

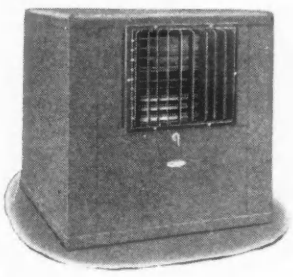
ELECTRICAL SOUTH
GRANT BLDG. ATLANTA, GA.

tel chime clocks, kitchen clocks, commercial clocks—in fact clocks for every purpose are included in this complete line.

Shown here is the "Commerce," a low-priced commercial clock available in black or bronze in eight or fifteen inch sizes, priced from $8.95. This model is also available in a twelve inch size in bronze or white, with a chrome model for a slightly higher price.

Portable "Kumfort Kooler"

The new line of "Kumfort Koolers" recently announced by Hall Manufacturing Co., Cedar Rapids, Iowa, is described in an attractive folder just released by the company. Advantages claimed for this line are low first cost and operating cost, easy installation, and small space required.

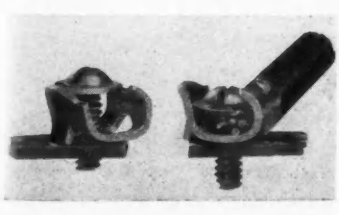


The units are constructed of automobile body steel, coated inside with special rust proofing, sound deadening compound. Air distribution is controlled by means of directional flow grilles. A special feature is the Roto Atomizer which delivers a uniform spray of water over every inch of the cooling mat.

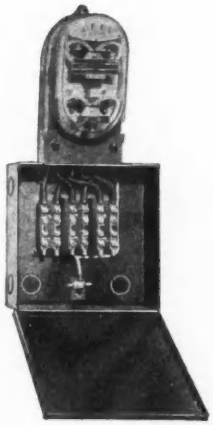
A portable model is available having a capacity of 1200 cubic feet per minute, powered by a ¼ horsepower motor. The stationary models are available in capacities from 2800 to 22000 cubic feet per minute and are powered by motors of from ¼ to 5 horsepower.

New Solderless Connector

A new solderless connector has been developed by the Square D Company, Detroit, Michigan. It is called the Universal Speed Connector, because of its ability to take from No. 14 to No. 4 wire, and because it saves time in wiring. The connector is free to rotate around the screw, thus allowing wire to be inserted from almost any angle. This feature is important where large wires are used in a limited space. The unusual range in wire size (from No. 14 to No. 4) permits the use of large wires for service drops to small 30 or 60 ampere switches. **(See next page.)**



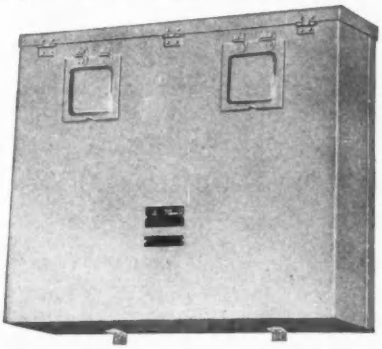
Adequate Wiring DEMANDS *Modern Metering*



Catalog No. M-1-6

INDOOR METER CONNECTION BOXES

Equipped with Standard NELA Removable Meter Trims to fit any standard bottom connected meter up to 75 amperes. Adapted to addition "horse collar" trims for side connected meters. Black steel, finished in black enamel. Special orders filled. All cabinets equipped with insulated neutral block.



W-13 with Conduit Hubs

TRANSFORMER CABINETS

For housing one Watthour and one demand meter installed side by side. Wall or pole mounting space provided for test blocks, when ordered. Built of aluminum or rust-resisting steel. Cover equipped with hinges and lid supports.

OUTDOOR METER BOXES

Highest quality cabinets of this type on market. Compact, convenient, roomy, handsome and low priced. Made of aluminum or rust-resisting steel. Dial easy to read. Hubs furnished at slight extra cost.

Write today for Catalog No. 10

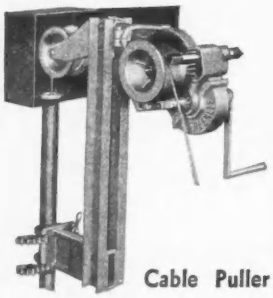
Weco also produces a full line of Socket Meter Troughs and cabinets. Write for Catalog No. 8 for these listings.

WECO ATLANTA

WALKER
ELECTRICAL COMPANY
ATLANTA, GEORGIA

Greenlee TOOLS

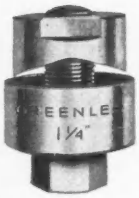
TIMESAVERS and PROFIT-MAKERS FOR THE CONTRACTOR



Cable Puller

No longer is it necessary to use cumbersome, heavy equipment for pulling in cable. The Greenlee anchors right to the conduit through which the cable is to be pulled and is easy to handle and simple to operate.

Knockout Tools



Greenlee Punches and Cutters make it easy to enlarge holes in switch boxes, cabinets etc. They form clean-cut holes quickly and accurately, without reaming or filing.

ASK FOR CATALOG NO. 31E if you don't have a copy. It shows these tools as well as others of interest, such as Hydraulic Conduit and Pipe Benders, Joist Borers, Hydraulic Pipe Pushers and Electricians' Bits.

GREENLEE TOOL CO.
1707 Columbia Ave.
ROCKFORD ILLINOIS

GREENLEE TOOL CO., 1707 Columbia Ave.
Rockford, Illinois

Would like information on _____

_____

☐ Please send a copy of Catalog No. 31E.

Name _____

Street _____

City and State _____

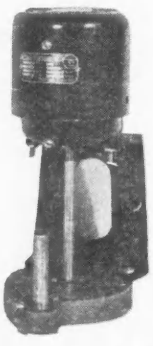
My jobber is _____ ES-3-40

The connector is self-centering so that there is no need to wind the wire around the stud, or to separate stranded conductors. As the screw is tightened, the lug is forced to one side and the wire is gripped tightly. When the tightening is completed, the screw exerts pressure against the wire on one side and the lug on the other side. Thus, bending of the screw is prevented, while positive contact is assured.

Circulating Pump for Cooler

The K. & H. Manufacturing Company, of Dallas, Texas, has developed an efficient pump for circulating water in evaporative cooling units. It is available to manufacturers, distributors and dealers.

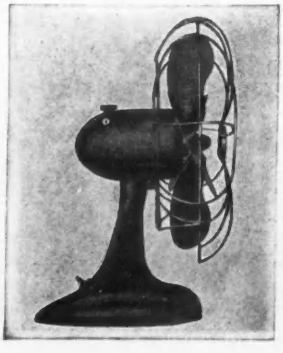
The K. & H. pump is especially designed for the service for which it is intended. It develops sufficient pressure to circulate an ample supply of water through the largest evaporative cooler systems. According to the manufacturer, it has a fool-proof motor that is quiet running and entirely waterproof, and will pump up to two and one-half gallons per minute against a head of eight of ten feet.



An attractive trial proposition is offered by the manufacturer, whose address is 3410 Ross Avenue, Dallas, Texas.

Signal Fan Catalog

The complete line of Signal fans for 1940 is shown in a new catalog just off the press, including illustrations and descriptions of the new DeLuxe 16-inch oscillating fan, the new 10-inch streamlined oscillating fan, and the new "Challenger" line of vent fans. A copy will be sent upon request to Signal Electric Mfg. Co., Menominee, Michigan.



New "Quick Selector" Catalog

A new 59-page "Quick Selector" catalog, designed to help the user of electrical apparatus in selecting the right equipment for a motor or lighting circuit, has been announced by the Westinghouse Electric and Manufacturing Company.

Safety switches, Nofuze circuit breakers and multibreakers with ratings of from 25 to 600 amperes on alternating voltages up to 600, various types of panelboards, motor control devices, and motors are featured in successive sections of the catalog. Four pages of general application data contain NEC recommended installation practices, simplified and tabulated for easy reference.

Most sections contain tips on mounting and connecting the apparatus for convenience and safety; all sections are profusely illustrated with pictures, and are supplemented by circuit diagrams and tables to facilitate quick, accurate selection. Copies of catalog 30-000 may be secured from department 7-N-20, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

"I'm at hotel
Mayfair"
CENTER OF ST. LOUIS BUSINESS
"Fine, that's near my office"
Over 50% of all rooms $3.50 or less, single; $5.00 or less, double

70 MASTER-LIGHTS

"A Master-Light For Every Need"

ANNOUNCING TYPE "F5"

YOU OWE YOUR MEN THE BEST

FASTER—BETTER LINE REPAIRS

Portable hand searchlights for repair, inspection and emergency crews. Most powerful, sturdy and lightest weight made. Many other dry and rechargeable battery types.

F5—Mile Range—13" high ONE of 70 Master-Lights

MANUFACTURERS OF WORLD'S MOST POWERFUL AUTOMOBILE HEAVY DUTY ROOF MOUNTED SEARCHLIGHTS. MADE SPECIALLY FOR REPAIR AND INSPECTION CARS.

Buy Direct From Manufacturer—Lights Sent On Approval

CARPENTER MFG. CO.

188 SIDNEY STREET—CAMBRIDGE, MASS.

Revere FOREMOST IN 1940!

The Only complete line of Service Station Lighting Equipment

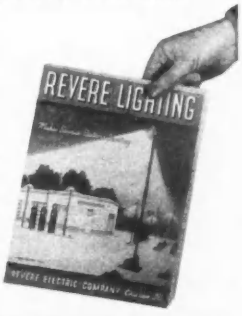
Floodlights can be lowered for cleaning as often as necessary.

JOBBERS!

There is plenty of new business to be had in the Oil Station and Industrial Lighting field. Go forward with the Revere line of lighting equipment! It is just what you have been looking for to boost sales.

GET THIS NEW CATALOG

This new 80 page Catalog is yours for the asking. Write for your copy. Shows the complete line of Revere Lighting Equipment with over 300 *new* money making items.



REVERE ELECTRIC COMPANY

757 W. JACKSON BLVD CHICAGO

Originators of the Hinged Floodlight Pole

SERVICE STATION LIGHTING EQUIPMENT OF EVERY DESCRIPTION

Once a guest, Always a friend

HOTEL WOLVERINE

Hotel Wolverine takes pride in noting the large number of guests who return to its doors. Travelers like the quiet, friendly atmosphere and the delightful accommodations afforded them. They appreciate the economy and find Hotel Wolverine located conveniently close to all activities.

500 ROOMS WITH BATH from $1.50

ELIZABETH ST. EAST AT WOODWARD AVE.

DETROIT

DINKLER HOTELS

Landmarks of Southern Friendliness

You will find the Dinkler Hotels located conveniently on all principal highways in the South . . . in each you will find a cordial welcome by a cheerful, friendly staff. The rooms are large and well ventilated . . . each with private bath and radio . . . garage connections are convenient and popular prices prevail in dining rooms and coffee shops.

★ The ANSLEY IN ATLANTA, GA.
★ The SAVANNAH IN SAVANNAH, GA.
★ The ST. CHARLES IN NEW ORLEANS, LA.
★ The ANDREW JACKSON IN NASHVILLE, TENN.
★ The JEFFERSON DAVIS IN MONTGOMERY, ALA.
★ The TUTWILER IN BIRMINGHAM, ALA.
★ The O. HENRY IN GREENSBORO, N. C.

MODERATE RATES

ILLUSTRATED FOLDERS SENT UPON REQUEST

DINKLER HOTELS,

CARLING DINKLER, President and General Manager

OPERATING 3000 ROOMS IN SOUTHERN HOTELS

Photo Meter Tester Fast and Accurate

(*Continued from page* 44)

position of the selector switch on the control box. To eliminate any time variations which might occur in starting and stopping the rotating standard, two relays are used to open and close the circuit.

Tests made with this instrument in the General Electric meter laboratory indicate that it is accurate to .004 per cent in one revolution and .0004 per cent in 10 revolutions. This accuracy is much higher than it is possible to read by other methods. The over-all accuracy depends on the rotating standard but with this tester it is said to be higher than that of any other method because the timing error is negligible.

Considerable savings may be made with this instrument as it does not require an operator to watch and time the running. Because the photo tester is accurate to such a high degree the running time ordinarily used is cut to one half.

Other uses for the new photo tester include checking the accuracy of rotating standards by the primary standard method, starting and stopping meters in gang testing for which an auxiliary relay is required.

For polyphase meters of the "V" type which do not have creep holes in the disk a small mirror is provided with the photo tester. The mirror may be attached to the rotating shaft without changes or marks being made on the meter disk. Use may be made of the photo tester on this and older types by the mirror or creep hole method.

Simple Defrosting Methods For Refrigeration Coils

(*Continued from page* 37)

by using a refrigerant check valve in the line. In this manner, the valve opens to the liquid line only when the pressure in the liquid line is overcome by the pressure in the defrosting coil being used as a condenser. When defrosting is not in progress, the check valves never open, thereby, eliminating the use of hand valves in the refrigerated compartment.

A refrigeration application can be the best in the world, but if there is no sensible provision made for defrosting, the temperature cannot be maintained during the defrosting period. For best performance, I recommend that the defrosting problem be given ample consideration during the selling and installation period.

Lighting for Both Use and Display

(*Continued from page* 35)

been without parallel as a public utility. Like the railroads, telephone and telegraph systems, the Appalachian had its primordial background, harking back, first, to water-driven mills, succeeded by the "miracle" of steam power.

In 1904 a steam-driven electric power plant was set up in Bluefield, which was then given the advantage of electric lights, but the utilization of electricity as a motive power was not generally developed until the Appalachian Electric Power Company came into the field.

The Appalachian acquired the antiquated, outmoded Bluefield power system in 1911 and at once started the work of extending its power lines into the coalfields. Electric energy quickly revolutionized all industrial methods of operation, such as that of mines, huge rock quarries and crushers, and at the same time gave birth to a diversity of industry that has continued to multiply throughout the intervening years. Its building of huge dams and steam plants to keep pace with the tremendous industrial developments it had set in motion, opening up a vista of new opportunities to investors and captains of industry, has formed the real background of a very large portion of the outward activities of Bluefield and many other communities.

SPEED UP YOUR PROFITS with IDEAL

1. Wire-Nuts
Save on materials—no solder, no tape, no blow torch or fuel. Get a quick O.K. from the inspector or owner. No trouble, no bother. Better electrically—stronger mechanically. A size for every common wiring joint.
2. "E-Z" Wire Strippers
Neatly, easily strip toughest insulation without nicking or cutting strands. Strip solid or stranded wires from No. 20 gauge to No. 5.
3. Cable Ripper and Wire Gauge
Cleanly rips non-metallic sheathed duplex or lead covered cable. Case-hardened cutting point gives long service.
4. Joist Boring Machine
Bores holes at any angle. Operates from floor—eliminates climbing up and down ladder, dangerous reaching, back-breaking effort. Quickly adjustable for overhead work up to 11 feet.
5. Fuse Clip Clamps
Cut down resistance between clips and fuses, insuring 100% contact. Insulated skirt protects fingers from live parts. Seven sizes for gripping wide or narrow Ferrule or Knife Type Clips.
6. Fish Tape Reels and Pullers
No expensive tape breakage—no live contacts. Cost and trouble of fishing reduced to a minimum. Available in 7 sizes. Junior Size $2.50 with 50 ft. of tape.
7. Test Lite and Fuse Puller
Handy pocket size combination tool tests live circuits and pulls fuses.
8. Fuse Reducers
Protect over-fused circuits. All sizes available.
9. Fuse Pullers
Eliminate danger of pulling and replacing cartridge fuses by hand. Made of laminated fibre in 4 sizes.

IDEAL SOLD THROUGH JOBBERS
Electrical Products Division
IDEAL COMMUTATOR DRESSER CO.
1017 Park Avenue Sycamore, Illinois

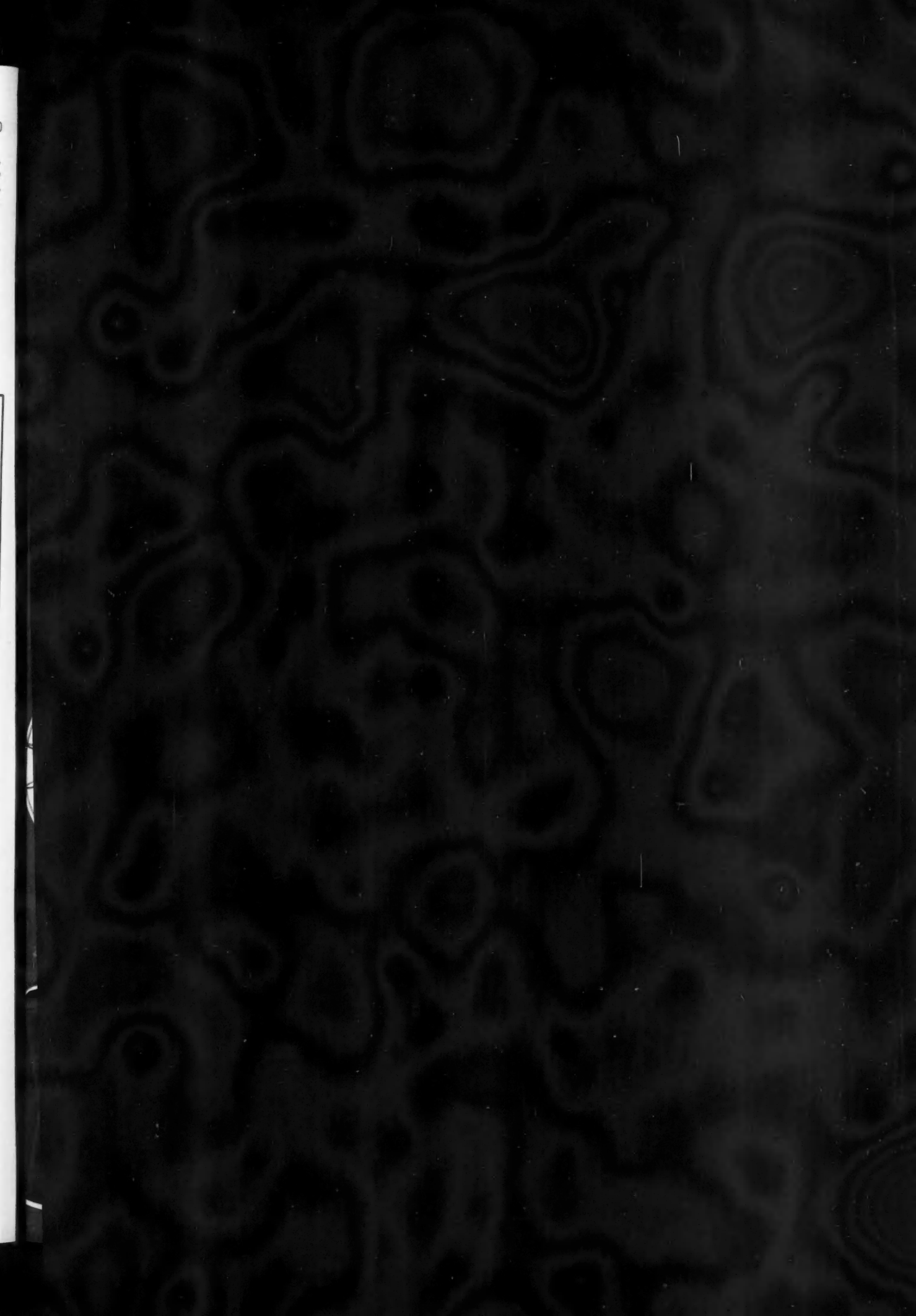
SUPERIOR NAIL KNOBS

Approved by National Board of Fire Underwriters. Real leather head washer; extra heavy cap; positive grip wireways; new Code base; steel spring washer; and 12d cement coated nail.

SEND NOW for newest literature including low price lists.

SUPERIOR PORCELAIN CO.
Box 669 Parkersburg, W. Va.

THE MATERIALS OF GOOD LIVING ARE BROUGHT TO A FOCUS HERE
Mayfair
ST. LOUIS
LOCATION • COMFORT
FINE FOOD • COURTESY
Over 50% of all rooms $3.50 or less, single; $5.00 or less, double

YOUR PASSPORT to CONVENIENCE COMFORT COURTESY

Over 50% of all rooms $3.50 or less, single; $5.00 or less, double